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ABSTRACT

Student grouping on the elementary and secondary level is discussed. The three sections include: (1) historical perspective of grouping patterns, (2) grouping objectives and purposes, and (3) grouping criteria and practices. Emerging patterns of horizontal and vertical school organization represent a conscious attempt at flexibility. Also included is a description of grouping as a guidance technique. Pros and cons of homogeneous grouping are discussed, along with limitations and evaluation of recent research findings. Summaries of these studies and a chronological table of the research are included. (Author/MC)

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GROUPING FOR INSTRUCTION

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GROUPING FOR INSTRUCTION

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GROUPING FOR INSTRUCTION

The grouping of school children has traditionally been a major problem of school administration. In any school, there are students, teachers and space. The organization of groups has been viewed as a practical necessity, if only to utilize effectively both the available teachers and the available space.

Historical Perspective

Anderson[1] has observed that the date when educators first made deliberate use of group instruction has not been definitely established. A formal school is inevitably concerned with children in aggregates, and for countless decades teachers have arranged various school activities in which simultaneous participation by numbers of pupils has been intended. "Participation" has various shades of meaning: sometimes a group is merely a collection of children engaged in different thoughts or activities; at other times a group may include many pupils intently engaged in a single, absorbing activity. Since thousands of schools and millions of teachers have employed at least hundreds of different plans or systems of class organization and grouping, it is possible in a historical account to review only those which have been more widely publicized or adopted.

Whatever the pattern of vertical school organization employed, schools in this century have usually allocated pupils to teachers, spaces, time, and program offerings in terms of fixed or stable classes, whose purposes may be either all-inclusive, as in the so-called "self-contained classroom," or specific and limited, as in the departmentalized school. These two patterns have evolved through a long period in which many related patterns have been seen to wax and wane.

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[1] Robert H. Anderson, "Organizing Groups for Instruction", Individualizing Instruction, Yearbook No. 61, Part I (separate volume). Chicago, Illinois: University of Chicago Press, 1962, pp. 239-264.

Prior to the general adoption in the nineteenth century of grade-level patterns, most schools were basically tutorial, and instruction was essentially individual. Teaching was then essentially a primitive art, and in view of the crude technologies then available, some of the earliest endeavors in group instruction were remarkably imaginative and courageous. Some were inspired by dubious theories of instruction, others (like the monitorial system) by false theories of social economics, and still others by incomplete though plausible notions of human learning and administrative organization. All contributed to the gradual formulation of ideas which still prevail with respect to grouping and other school practices.

Among the ideas still generally accepted is that "regular" classrooms in elementary and secondary schools should be of uniform size, capable of comfortably housing some 20 to 30 pupils. Despite the importance of such questions as optimum architectural layout of space, it is significant that no substantial theoretical justification has yet been offered in support of this arrangement of classroom space. All that can be found in the literature are practical justifications and an imposing array of arguments or rationalizations regarding the merit of this arrangement and the class-size pattern which accompanies it.

Viewing this matter historically, one notes with interest that the one-room school and, later, the multi-teacher school both emerged while American methods of building construction were relatively primitive. The available building materials, particularly the logs taken from trees native to New England and the Atlantic seaboard, and limited engineering skills tended to require a certain general size and shape of these schools. It is obvious that the educator, who was necessarily adaptable and cooperative, developed social and technical arrangements which fitted the environment in which he was placed. Over time, it seems more than likely, teachers acquired strong habits and loyalties geared to the aforementioned arrangements, and hence a philosophy of organization may have been born.

While this process was under way, there was a brief but important interlude during the first decades of the nineteenth century in which the monitorial or Bell-Lancastrian plan was employed to teach a large number of children very cheaply.[2] One master teacher, aided by student assistants (monitors) taught all students, often numbering several hundred. Although the plan had many long-range beneficial effects, its basic faults were fatal to it. The goals of instruction that could be attained by the monitorial (mutual instruction) plan were, at best, very limited ones, and cheapness, not excellence, was its major justification.

During the second half of the nineteenth century, the classification of pupils into grades became accepted practice. Shortly, however, educators became concerned with the rigidity and inflexibility imposed by the graded structure. About 1890, there appeared a number of plans and systems intended to promote the individualization of instruction. Some city systems attempted semi-annual or quarterly promotion plans to provide more flexibility in grading. A plan introduced in 1888 by Preston W. Search, superintendent of schools in Pueblo, Colorado, emphasized individual work and individual progress, as opposed to group work and group progress, and eliminated the concept of nonpromotion. Another plan, involving an assistant teacher to help in an overpopulated classroom, emerged in Batavia, New York, in 1898 and was used in Batavia and elsewhere (in various forms) for about thirty years. More recently, the idea of having an assistant teacher has reappeared, not only in connection with classroom overcrowding but also as a means for the training and induction of new teachers.

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[2] For detailed description and historical summary, see Yale-Fairfield Study of Elementary Teaching, Report for 1954-55, Chapter III, pp. 49-90. Prepared by Constance M. Burns *et al*. Edited by Clyde M. Hill. New Haven, Connecticut: Yale-Fairfield Study, Box 2164, Yale Station, 1956; see also Phil E. Hager, "Nineteenth Century Experiments with Monitorial Teaching," Phi Delta Kappan, XL, January, 1959, pp. 164-167.

Toward the turn of the century, some school systems had begun to provide different programs, or the same program on different time schedules, for slow, average, or gifted children. Homogeneous grouping, at first rather crudely arranged, became fairly common as an attempt to simplify the teacher's job in meeting the needs of children with varying abilities.

Among the most famous plans of organization was the work-study-play "platoon school" as developed in 1900 by W. A. Wirt at Gary, Indiana. Pupils were divided into two platoons, and classes were scheduled so that one platoon studied academic subjects in homerooms while the other platoon engaged in "activities" (art, music, physical education, auditorium, library, nature study, home economics, manual arts) in rooms appropriate for them. The plan permitted economical use of the school facilities, although its main purpose was to insure proportionate emphasis upon the three major aspects of child living (work, study, and play).

Two rather similar plans, attempting to allow each child to master the successive units of work in the fundamental subjects at his own pace, became known as the Winnetka (Illinois) and Dalton (Massachusetts) plans because they were developed in those cities. The Winnetka Plan, following the work of F. L. Burk in San Francisco State College's training school (1913-24), was developed by Carleton W. Washburne after 1919. The curriculum was divided into "common essentials" and "group and creative activities", it being assumed that all children needed mastery of the former but that the results achieved by children in the latter might legitimately differ. Half of each morning and afternoon session was devoted to the common essentials, each pupil working independently on a succession of unit lessons upon which he tested himself prior to asking the teacher for a mastery test. Pupils were classified according to age and social maturity, and the environment of the classroom was presumably very different from classrooms marked by grade-level standards, group examinations, and other features of promotion-failure procedures. Although the Winnetka Plan has had very great influence upon other efforts to individualize instruction, and combat the lock-step graded system and philosophy, it has undergone considerable modification over the years.

The same is true of the Dalton Plan, first developed by Helen Parkhurst in 1919 in a school for crippled children and in 1920 in the Dalton high school. The plan was based primarily upon a sociological philosophy: Emphasis was upon the importance of a child's living within the school as he went about his work, rather than upon the curriculum as such. Guiding principles included the freedom of children to pursue interests on their own terms, the worthiness of community living, and the budgeting or apportionment of time for the tasks which were to be completed. It is interesting that children, though free to set their own pace, were required to complete the corresponding (grade-level) units for each of the other subjects before proceeding to the next assignment in a given subject. Thus, an "even front" was maintained.

Purposes of Grouping

Although there may be a variety of reasons for grouping, the essential one is to facilitate learning, and learning of the widest possible scope. The grouping of students for instructional purposes involves more than merely providing for teaching convenience or acceleration of academic learning. As Taba[3] points out, grouping can be considered an important part of the strategy to create conditions for aiding not only academic learning but also the type of learning for which direct teaching is ineffective. If, for example, it is important to learn democratic values, adequate self-expectation, sensitivity to how other persons feel and think, and a sense of a responsible role in a common undertaking, and if experiencing is an important ingredient of these types of learning, then grouping individuals together who can serve as stimulants and models to each other would be highly relevant. It is not unreasonable to expect that grouping together with thoughtfully planned interaction around a variety of learning tasks from performing chemistry experiments to reading and reacting to literature could markedly extend the capacity to learn and the scope of possible learning.

In grouping for such purposes complementation which takes account of differences rather than similarities may have to be the chief principle, and developing group cohesion and adequate social space not only to accomodate but also to aid and abet individual differences may have to be the chief characteristics to strive for. For example, a student with low self-expectation may be helped by another who can pay attention to him and treat him as a human being. Such complementation does more than provide for "social adjustment." It provides a setting for releasing intelligence, for motivation to learn, and for acquiring values and orientation to life. In several experiments such an effort to form small groups by complementation of needs and to provide association and interaction in small work groups within the usual arbitrarily composed class group brought remarkable results in achievement and in group morale and a strong impact on values. The anlaysis of one instructional group in which this principle of composing small work groups within the class was observed and in which much of the study and work involved interaction suggested that with fair understanding of the group and with a reasonable effort of creating a psychologically favorable climate and psychologically sound sequences for learning, the school can be fairly effective in modifying at least the socially conditioned aspects of personality and in controlling and counteracting some rather potent social learning. It is possible that the school program, by focusing on values, can make itself a powerful force for education in democratic human values.

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[3] H. Taba, With Perspective on Human Relations: A Study of Peer Group Dynamics in an Eighth Grade, Washington, D. C.: American Council on Education, 1955, pp. 168-169.

The principle of grouping for psychological cohesion and for complementation can be applied to grouping for work also. A working group may be put together to assemble the needed intellectual and social resources by a designed heterogeneity. The best group for this purpose is the smallest one that encompasses the needed resources. Experimentation with small work groups on two criteria -- a designed heterogeneity in abilities, skills, and resources and a psychological cohesiveness -- has brought reports of greatly heightened learning, partly because grouping by psychological cohesiveness greatly reduces the irrelevant activities and discipline problems and partly because the climate induced increased motivation as well as increased cross-fertilization of ideas.[4]

The above analysis suggests several general points about grouping. First, it seems idle to talk about grouping in general. Manageable productive and dynamic learning groups can be put together only in the light of the specific purpose, the specific situations, and the nature of learning processes employed. It makes, for example, a great deal of difference how rigid and uniform the learning situation is, whether it requires participation and interaction or not, and how much self-expression is desired. Further, it is necessary to match the techniques of learning and teaching to the kind of grouping employed. If a teacher uses small groups and then expects to proceed as usual, making the same type of assignments and organizing the learning processes in the same manner, grouping will have little bearing on achievement or anything else. Only when a carefully considered grouping pattern is accompanied by appropriate ways of teaching-learning experiences can one expect an increased productivity of learning.

Criteria for Grouping

It seems clear also that multiple rather than single criteria need to be employed for designing groups if productivity and extension of the scope of learning and the creation of adequate social and emotional space are to be the outcomes. Classrooms composed exclusively by expedience and convenience of scheduling can easily contain groups composed of human ingredients which are impossible to manage or which create an unhealthy social environment. The idea of reducing differences by homogenizing groups on a single basis is always an illusion, as homogeneity in any one respect is bound to introduce heterogeneities in many others. Reducing heterogeneity also impoverishes the stimulation for learning by reducing the variety of background and experience. It is an asset only in learning tasks in which uniformity in content and in pace is desirable.

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[4] *Ibid.*, pp. 177-183.

The more we divide general development into specific traits, the easier it is to group pupils homogeneously on a single trait but the harder it becomes to group them homogeneously on all traits and hence to apply a single classification scale such as grade level.

Homogeneous grouping is a practice wherein the total student population is divided into instructional groups according to some criterion of likeness. This criterion of likeness can be almost anything: height, weight, sex, IQ, achievement, interests, study habits, socioeconomic class, and on and on. There is some degree of heterogeneity in any group. This is assured by the facts of individual differences. But deliberate heterogeneous grouping attempts to bring students together according to dissimilarity rather than similarity.

Efforts to narrow the range of achievement of a group of pupils has been a problem which educators have faced since the advent of the graded system. It has been commonly assumed by many teachers and administrators that homogeneous grouping narrows this range and thus creates a simplified teaching plan.

Through the years the hope has remained that some technique might be developed for inter-class grouping of pupils resulting in increased homogeneity. The notion that pupils of like ability should be placed together for more effective learning seems always to have its proponents.

For many teachers, a group of thirty pupils grouped homogeneously would be a teaching Utopia. Some admit that they would be willing to teach larger classes under such conditions. But what do we mean by "grouped homogeneously?" Applied to humans, the term "homogeneous" is a relative one. Grouping children "homogeneously" on the basis of a single criterion does not produce a group that is homogeneous to the same degree judged by other criteria.

Grouping Practices

The proposed plans and practices to modify traditional grade systems include semiannual, quarterly, subject, and special promotions. Other proposals have been holding standards constant and increasing instruction for slow pupils by giving the regular teacher an assistant, by establishing opportunity rooms, by providing special remedial teachers, and by establishing vocation schools for the retarded. The dual and multi-tracked curriculum for the fast, medium, and slow learners has also been tried with pupils of the same chronological age in one group, or with separate classification of pupils into slow, medium, and fast learner groups.

In the graded elementary school the common bases for grouping continue to be chronological age, length of school attendance, and success in the previous grade. Within a grade, children may be divided into slow, average, and fast learners. The division may be made on the basis of reading or mental tests or criteria. At any rate, it is this kind of division that most people have in mind when they think of ability grouping.

Sometimes the highly gifted are segregated in special classes or even special schools. Sometimes it is the very slow or handicapped or very troublesome children who are grouped apart from the others.

Any innovation in school organization is likely to receive much publicity. Widely publicized at the present time is the nongraded, or ungraded, school in which several grades are combined into a unit or program and individual progress is stressed. For example, the first three grades may be combined into an ungraded primary program. In it a child may spend two years or three or four, depending on his progress.

Grouping Children in the Nongraded School

Goodlad[5] reports that existing nongraded programs do not follow any uniform pattern with respect to grouping practices, although it is quite clear that progress in reading is one of the major factors in making most decisions about grouping. In a number of "ungraded primary" plans, for example, the children are grouped according to reading-achievement levels, usually for the purpose of reducing the range of abilities with which the teacher must cope in language-arts instruction. Here it is assumed that reading achievement is approximately correlated with achievement in other curriculum areas, and that some degree of homogeneity is obtained by using reading as the yardstick when assigning children to classes. This implies that some groups will include children who are considerably older or younger than the average child in the group; it implies, further, that older children whose pace in reading is slower than "normal" may experience some repetition of subject matter in other curriculum areas when they are transferred eventually to a younger group whose reading level corresponds with theirs. This of course depends upon the extent to which teachers are able to individualize the instructional program in all content areas. Proponents of this modified form of homogeneous grouping (one-dimensional homogeneity) argue that children's overall needs are better served when teachers deal with a limited range of problems in the skill generally regarded as the most important of all the child learns in his early school years, namely, reading.

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[5] John I. Goodlad, and Robert H. Anderson, The Nongraded Elementary School, Burlingame, New York: Harcourt, Brace and World, Inc., 1963.

Others feel that a wide spread of reading abilities and reading problems within the same class is not necessarily as problematical as the implications of homogeneous grouping. Many schools therefore assign children to class groups on a relatively random or chance basis, within age classifications roughly comparable with those of graded schools. Other group children on the basis of more carefully delimited age classifications, for example dividing 50 first-year-primary children into two class groups with those over six years six months in one class and those under six years six months in the other. Still another approach is to constitute class groups on a rough social-unity basis, attempting to combine those children in one class whose interests, personalities, and backgrounds are well balanced with respect to each other.

There are various ways of grouping children in a nongraded school, just as there are in a graded school. There is no necessary connection between the grouping used and the nongraded idea. While so-called homogeneous groupings based upon reading achievement are found quite frequently in nongraded schools, there are many where groupings are based simply upon age, random selection, social relationships, or similar factors. It is natural for teachers in a nongraded school to want to continue with their class for more than one year, but there is no direct relationship between this arrangement and the nongraded plan. Some schools are deliberately establishing class groups that cut across a number of grade lines, while others are experimenting with teams of teachers working with classroom groups that have been combined, at least in part, into a larger unit. Therefore there is no established pattern in the grouping of children in nongraded schools, and in fact there probably should not be. Once grade-mindedness has been shattered and teachers begin to deal with children within a more flexible frame of reference, many possible solutions to age-old problems are likely to come to mind.

Heterogeneous Grouping

Most schools practice heterogeneous grouping. This plan provides for children who are educable to be divided so that each classroom has pupils with varying abilities. Grouping takes place within the framework of the classroom as teachers classify the children, in some cases according to ability in reading and arithmetic. This plan is then varied throughout the day. Proponents of this plan contend that it is more democratic, since it provides opportunities for future leaders to work and associate with children of all abilities and social-economic backgrounds. They further maintain that if additional funds were used to reduce teacher load instead of setting up separate classrooms for the gifted and retarded, all children would make expected progress under a heterogeneous grouping plan. This is not to imply that special education is not needed for those children who, though mentally retarded, can be educated to some extent.

Shuster and Ploghoft[6] suggest that heterogeneous grouping in schools which are sincerely interested in achieving the objectives of elementary education seems to offer the best approach to accomplishing them. However, such a plan must be based upon a teacher-pupil ratio in the primary grades of 1:22 and a maximum ratio of 1:25 at the intermediate grade levels. Teacher loads which exceed such ratios cannot possibly result in the maximum benefit for each pupil. Larger numbers of pupils place a severe strain upon the physical and mental resources of the teacher to the extent that mediocrity becomes either consciously or unconsciously the goal.

In schools which exceed desirable teacher-pupil load ratios some homogeneous grouping may not only seem feasible, but is desirable. That is, under poor instructional conditions such as ratios which exceed 1:30 certain pupils should be taken out of the class for more specialized help. For example, retarded pupils who have the potential, as determined by psychological assistance should be placed in homogeneous groups to remedy identified weaknesses. That is, pupils who for some reason other than lack of mental ability, have not made satisfactory progress should be placed in specialized classes for a portion of the school day. In such classes pupils may further their interests and be challenged to exceed average levels of accomplishment. It has been emphasized that it is democratic for each child to have the opportunity to progress to his maximum.

Very few thoroughgoing attempts at heterogeneous grouping exist. Most of the class groups in our schools are quite homogeneous in regard to chronological age and socioeconomic status, although they are heterogeneous in regard to ability and achievement.

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[6] Albert H. Shuster and Milton E. Ploghoft. The Emerging Elementary Curriculum, Columbus, Ohio: Charles E. Merrill Books, Inc., 1963, pp. 508-512.

Ability Grouping

The criterion most commonly used in seeking to establish homogeneous ability groups is IQ. As pointed out earlier, groups that are relatively homogeneous on IQ are not homogeneous on achievement. Goodlad and Anderson cite the case of a fifth-grade class in which the IQ spread of 60 or more points normally found in heterogeneous classes had been cut in half by removing all pupils of IQ over 120 or under 90. The spread in achievement in this group differed very little from the spread usually found in a class where no such modification is made.

Most teachers are aware of the gross discrepancies between IQ distributions and achievement distributions in the classes they teach. Many pupils who rank toward the top in achievement are in the middle range on IQ distribution: many students with genius IQ are mediocre in their school accomplishments. In his review of the literature on ability grouping, Otto[7] concludes that the separation of students into two groups according to ability reduces the variability in achievement by only about 7 per cent. The variability is still about 93 per cent of what it was before. When three groups are formed, the range in achievement becomes approximately 83 per cent of what it was before such selection is made -- a reduction of 17 per cent. The evidence seems to indicate that ability grouping does not reduce to an appreciable degree the variability in student achievement.

What is the character of groups after students have been brought together on some criterion of homogeneity? Ability grouping based on IQ reduced achievement variability in a group only slightly. Likewise, achievement grouping based on average achievement falls far short of providing group homogeneity on anything since students vary so in their attainments. Grouping in specific subjects on the basis of student homogeneity in achievement does reduce group variability. This homogeneity can be refined more and more, to the extent that there are many students from whom to select in grouping and to the degree that very precise areas of learning are selected. Two hundred students of the same age can be grouped rather precisely when the criterion used is arithmetic computation. Of course, the groups will remain heterogeneous in regard to other attainments.

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[7] Henry J. Otto, Elementary-School Organization and Administration, New York: Appleton-Century-Crofts, Inc., 1954, pp. 136-151.

Ability grouping has been established as the way to handle various types of special education programs set up by law in several states. Both mentally retarded and mentally gifted minors are grouped for a portion or for all of their school program.

Ability grouping, being a refinement of the graded system, exists in many forms in American education. We see it in athletics in A, B, and C teams. We see it in academic classes of all kinds. It exists in vocational courses; it is seen in the track systems that are currently popular in many high schools. We will probably have it at least as long as we have the graded system, and as long as we teach reading.

Ability grouping is the first step toward admitting that a grade is not a grade but an administrative device that has to be refined to be effective. Once one has started down this road, there is no end to refinements in grouping that can be evolved until one finally arrives at individualized instruction.

Perhaps the two strongest factors that motivate ability grouping are larger classes and the idea of meeting individual needs. These things are incompatible, and ability grouping is a solution. Hull[8] maintains that although the graded system may have its glaring inconsistencies and its abominable weaknesses, it is stamped upon our culture as well as our schools.

Nongraded classes, departmentalization, or team teaching are often advocated for reasons other than their superiority in helping children to learn. Team teaching, for example, may offer teachers greater opportunities for specialized instruction, increased use of technology, or the possibility of higher pay and more recognition for a master teacher.

If a person puts a high premium on saving time in preparing for a life career (time that may or may not be translated into achievements and earnings), he is likely to favor grouping plans that involve acceleration. Some persons may be opposed in principle to any plan that produces a social or racial imbalance in a class, whatever it promises in the way of higher achievement. Some argue for or against a plan according to whether or not it preserves democratic values.

Another consideration is the possible effect of one or another plan on a child's self-concept. Will placing him in a slow group lower his self-estimate and self-confidence, his acceptance of himself, feelings of belongingness, sustained motivation, productivity?

Achievement Grouping

Another criterion used in seeking to establish homogeneous groups is achievement. There are two major bases for achievement grouping. The first is an average achievement score computed by compiling the results from all sections of an achievement test. This score combines all sub-scores in arithmetic reasoning, arithmetic computation, paragraph meaning, word recognition, spelling, and so on. The data on individual differences presented earlier in this chapter reveal that students are not consistent in their scores. A student in the seventh grade may be at the seventh-grade level in average achievement, but at the eleventh grade in an aspect of reading such as paragraph meaning and at the fifth in an aspect of arithmetic such as computation. These differences within individuals cannot be organized away through inter-class grouping.

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[8] J. H. Hull, "Is Ability Grouping Taking Schools in the Wrong Direction?", The Nation's Schools, Vol. 73, No. 4, April, 1964.

A much more precise basis for achievement grouping is one wherein students are grouped according to their achievements in specific subjects. This is fairly common practice at the secondary school level where there often are several sections of mathematics, English, social studies, and other subjects. These sections cometimes are set up to provide a narrower range of pupil accomplishment in the group than would result from random assignment of students to classes. If there are ninety students enrolled for Algebra I, the range of average achievement in this subject in the usual heterogeneous class is reduced 66 2/3 per cent by dividing the ninety into three homogeneous classes, using the criterion of achievement in algebra. A given student might move during the day from Section I in English to Section III in mathematics and then to Section II in social studies. In this arrangement, the pattern of horizontal organization is homogeneous according to pupil achievement and departmentalized according to curriculum design.

So-called "ability grouping" has long been the subject of vigorous dispute both within and outside the profession. Until fairly recently, with the emergence of plans which combine the nongraded philosophy with cooperative-collaborative teaching, the assignment of children to ability groups has implied the segregation of children purportedly equal or similar in terms of a given definition of ability for periods of one year or more. Usually the criterion has been a summary index of general intelligence and academic aptitude: children of similar intelligence and subject-matter mastery are placed in the same class, so that there is a "fast" or "high" class, a "normal" or "average" class, and a "slow" or "low" class for each approximate age group.

Under some plans of ability grouping, it has been assumed that all children should eventually satisfy the same basic program requirements, but that the time element may be adjusted: The very fast group may complete the elementary-school curriculum in less than the usual six years above kindergarten, the great majority will complete it in six years as prescribed, and the slow children may be allowed seven or eight years to do so. Other plans adjust achievement standards to the ability level of the classes but assume that all (or virtually all) children will devote one year to each grade. Still other patterns may be found.

It might also be noted that some schools have established special ungraded or "opportunity" classes for atypical children, such as those with physical or mental disabilities. Of equal interest is the trend, greatly accelerated since World War II, toward separate arrangements for the unusually gifted.

Age Groupings

Olson[9] has noted that over the years there has been a slow and persistent trend toward paying more attention to age in grade groupings. Fewer children are held back to repeat a grade. The lowered retention rate has resulted in a decrease in "over-ageness" and hence a narrowing of the age range in a grade. Grade groups also have a younger average age because of the higher promotion rates.

This trend has resulted in more overageness in boys than in girls. Sex differences in ability to read are so regular and predictable that simply splitting a group by sex brings about a greater contrast than does any other grouping plan for reading instruction.

Even when children are grouped for instruction in some other way the significance of age and sex remains. For example, additional time spent on instruction doesn't compensate for the age deficit of children admitted to school early. Such children achieve less than do children of equal ability who are without the age deficit. In learning there is an advantage in simply being older (up to a point).

When there are varied goals, it may be an advantage to have several criteria for grouping. If we measure a group of children of a given chronological age on any one factor, there is great variety. But if we include several factors, there are fewer differences; that is, there will be greater homogeneity.

This fact has been illustrated by studies of what is called "organismic age." This is a computed age, composed of such diverse things as mental age, reading age, height age, weight age, dental age, carpal (wrist bone) age, and grip age. The range in organismic age for a group is commonly less than for any of the parts of which it is composed. The most important parts, according to many advocates of grouping, are those most closely related to achievement goals.

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[9] Willard C. Olson, "Ability Grouping: Pros and Cons," The PTA Magazine, April, 1966, pp. 25-26.

There are, of course, things other than information about human development that influence decisions on grouping. Various values and goals enter into a choice.

For instance, other things being equal, the cost of one plan as compared with that of another may determine the decision. Some people see a long-range technical and financial advantage in the new technology, such as programmed instruction and scheduling by computer. Others oppose such devices on the ground that they will increase costs, with not better results.

Developmental Grouping

Somewhat related to "organismic age" is the concept of developmental grouping advocated by Ilg and Ames[10] who have developed criteria for grouping based on physical, psychological and social measures of child growth and development. They maintain that careful and correct grade placement can form the basis for grouping.

"In the age period from 5 to 10 years it seems to us that a natural cleavage point comes at 8 years, another at 11 years. Therefore we would favor two clusterings of grades in this period, the first to include the 3 years from kindergarten through second grade, and the next the 3 years from third through fifth grade.

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[10] Frances L. Ilg and Louise Bates Ames, School Readiness, New York: Harper and Row, 1964.

In looking at these grouping more carefully it becomes apparent that the child of 5 to 7 doesn't have the stamina in energy or adaptability that he will develop by 8 years of age. Children of these earlier ages would profit by some reduction in school attendance. But more important, these younger children need to be allowed to progress at their own rate. They need to find their place. They need to be made ready for the rigors and the greater demands of the 8- to 10-year grouping.

It is understandable that the concept of an ungraded setup has arisen for this age group of 5 to 7. Such an approach has some definite advantages. However we would prefer to place the child in this age range more selectively and more specifically, since a child needs not only to go at his own pace, but also benefits from the stimulation of others who are progressing as he is. He thrives on an environment geared to him. When he is in a group that is operating more as a unit, hiw own adjustment is more easily discerned.

Within this initial 3-year period the child should be helped to find his place in a group suited to him. The rate and method of growth of most children can be picked up in kindergarten. Some, however, do not reveal themselves clearly until the more demanding learning situations of first grade. And still others may not expose their difficulties in putting forth effort and completing their assignments until they meet the more rigorous demands of second grade.

By third grade, if we accept and apply our developmental findings about each individual child, there should ideally be no misfits or failures, except perhaps in a matter of degree. This means that a child should not be passed into third grade until he is more or less at a full 8-year-old level developmentally (regardless of his age in years), and ready to accept the demands both of the age and of the grade. Academic demands will be even more strenuous in the fourth grade, wherefore he will need to be even more ready to accept them.

Most children can be placed in regular class grouping according to their rate of growth. But there will be some who will stand out clearly in this early 3 years as unsuited to the regular stream of education. There will come the time when any regular class group can no longer absorb them, when they will need to be sidetracked at least for their academic training.

This adjustment should definitely be made before third grade. It is for such children or even fewer, from the ages of 7 or 8 to 12 or 13 years. This group would include the extremes of the "reality-bound" child with normal potentials and of the highly individuated child, often very brilliant, who cannot adjust to the demands of the regular school group.

This type of grouping with which we propose to solve at least some of the special problems of the child who does not fit into the regular classroom, should not be confused with the kind of ungraded setup now being tried out in many schools, often including the entire group of kindergarten, first, and second grades as a somewhat free-floating ungraded primary unit.

In fact, our entire proposal for grouping children (both A and B quality groups for each grade, as well as the formation of a 5½-year-old class for those not ready for first grade, but too mature to need to repeat kindergarten, as well as the formation of these special ungraded classes), may seem to be moving in exactly the opposite direction from that being taken by many schools today with their new setups of an ungraded primary unti without class labels.

Actually both types of administrative solution are aiming at the identical thing -- having each child taught at a level for which his abilities make him suited. However, the two methods of achieving this identical end are quite different.

Even teachers of so-called ungraded primary groups admit that they know very well what grade they are teaching, whether it has a label or not -- so that in actual practice many so-called ungraded groups are not as ungraded as they are supposed to be.

While we agree that every child should be taught at the level for which his maturity suits him, we feel this goal is best reached by having class groups which are clearly labeled, and teachers who know very well what it is they are teaching. Then the child should be carefully fitted to the group for which he is best suited at the moment, by first determining his developmental level and quality of performance."

Dividing Pupils into Instructional Groups

Most educators must make two kinds of decisions each year with respect to grouping. The first involves fixed-class membership; the second involves intraclass, subgroup memberships that are possible for children. The second is treated in most current literature on group processes, classroom instructional procedures, and educational sociology, as these relate to children. The former is the subject of most discussions, regarding the pros and cons of heterogeneous and homogeneous grouping, departmental versus self-contained organization, and other patterns of school organization. There are, of course, many interrelationships between the two grouping problems.

Fixed or Stable Class Groups

In most cases, principals and teachers are faced annually with the necessity of allocating youngsters to "permanent" classes or sections. In the elementary school, the size of the pupil population often determines the plan of class assignments. Almost without exception, kindergarten children are assigned to teachers and spaces of their own, and the very small schools usually do not have kindergartens. Primary children may be assigned to classes composed entirely of children of a single age-and-grade level (e.g., 25 pupils in a first-grade room) or to classes which combine two or more age-and-grade levels (e.g., 15 first-graders and 11 second-graders in a "combination room"). Intermediate children, similarly, may be assigned to either a single-grade class (fifth grade, 29 pupils) or a combination class (16 fifth-graders and 15 sixth-graders together). Generally, the combination class is found in those smaller schools where there are not enough children to justify (economically) a separate room and teacher for each grade, although in recent years some large schools have deliberately arranged multi-age, multigrade classes for educational and social reasons.

Multi-Age Grouping

Multi-age grouping, or interage grouping as some have called it, has been of interest to educators for many years, yet relatively little basic research on it has been completed. Before the advent of graded organization multi-age groupings were common, and they still are in sparsely populated rural areas. Pupils were grouped this way, however, out of sheer necessity rather than for some logical or theoretical reason. Only as graded practice has come into disrepute, with educators seeking alternative patterns of class organization, has an interest emerged in the multi-age group as a possible education arrangement.

Self-Contained Classroom

Anderson[11] has observed that by far the most common arrangement for children in elementary school, especially in the primary grades, is the so-called "self-contained classroom." Self-containment implies both the relative independence of the classroom teacher from other teachers and also the physical self-sufficiency of the space in which the class lives and works. Since the classroom teacher handles and coordinates the entire educational program and various pupil-custodial functions, the self-contained arrangement theoretically permits the over-all integration and unity of the child's school experiences. It is also rather generally assumed and claimed that the child enjoys a desirable kind of social-emotional security as a consequence of both his membership in a small and stable group and his intimate and continuing relationship with one classroom teacher. While it may be that these advantages do obtain in many situations, little if any research evidence is available to show any such cause-effect relationship. Therefore, in recent years the self-contained classroom has become the center of lively controversy.

Departmentalization

The second major pattern of class organization is departmentalization. Long the prevalent arrangement in senior high schools and generally followed in junior high schools as well, departmentalization has been in general decline in elementary schools since the 1930's. The period of its greatest popularity below seventh grade, which seems to have been predominantly in the intermediate grades, is difficult to ascertain because most surveys were not specific enough in wording and in the labeling of statistics. It is not clear, for example, whether the arrangement whereby special-subject teachers working alongside self-contained teachers was construed by reporting superintendents as representing "some use of departmental organization." Also, many districts obviously reported "some use of" this pattern on the basis of pilot schools only, whereas the majority of elementary schools may have had no departmentalized classes. At any rate, the practice of departmentalization for younger children declined in prestige and popularity in the 1930's, 1940's, and 1950's. However, at the moment there is a strong trend toward its return to favor in some quarters.

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[11] *Op. cit.*, pp. 247-261.

Departmentalization requires little definition. The central idea is that the separate subjects are taught by separate teachers, each presumably a specialist in his subject. The children may move from room to room during the successive periods (usually 35-55 minutes) of the day, or teachers may move from room to room. Sometimes there is a complete reshuffling of the children into groups for each different class, and sometimes (below senior high school) the same groups move intact from class to class. Where the latter practice is followed, it is obvious that administrative convenience has been a more compelling factor than the desire to assemble, for each purpose, groups that have some specific educational justification.

Subgroupings

Once a class has been established, it usually remains for the teacher to create a constant succession of subgrouping within that class for purposes of fostering individualized learning opportunities. Although it is still possible to find classrooms where practically all teaching involves the same experiences for the total class simultaneously, many teachers in elementary and secondary schools make frequent use of subgroupings that take into account the differentiated interests, needs, work and study habits, social and intellectual affinities, and learning rates or capacities of the class members. Sometimes membership in these subgroups is fairly permanent -- for example, the high-middle-low reading groups to which pupils belong. A social studies group may sometimes continue working on a project or report for weeks or even months. Other groups may be highly informal or temporary.

Decisions about subgroupings are influenced in some measure by the nature and the amount of physical and instructional resources available. Flexibility in class activities is partially dependent upon the extent to which portable furniture of various types, adequate quantities of textbooks and resource materials, and various "extra" spaces are provided within the classroom and school.

Much has been written about the need for subgroupings as a means of enhancing each child's opportunities for learning experiences especially relevant for him as a unique individual. Particularly if the philosophy of nongrading grows in acceptance, with the inevitable consequence of even greater concern for individualization of each child's school experiences, teachers will find themselves less and less satisfied with total class lessons and more eager to arrange a great many subgroup lessons. Yet, such an aspiration will be difficult to fulfill so long as the present ratios of teachers to pupils are maintained. It is very unlikely that greater proportionate numbers of teachers will become available.

This leads to the conclusion that teachers will continue to deal with fairly large numbers of pupils, regardless of the ingenious devices and technologies that may appear to take certain aspects of the teaching workload off the shoulders of the staff. It means that much of the teaching that is done will continue to involve the total class and even combined classes, though some of this teaching would assuredly be more effective if smaller numbers of learners were involved. It means that teachers will constantly seek more suitable and efficient ways for inventorying the needs and interests of their pupils, simpler ways of arranging for subgroups to be assembled to carry on their work, and better techniques for maintaining suitable control of these subgroup activities.

Classroom teaching as presently organized in both secondary and elementary schools, whether classes are self-contained, departmentalized, or patterned some other way, is one of the most difficult roles in the entire American culture. The expectation that each child will receive explicitly individual attention severely compounds the problem.

It is evident from the foregoing that educators are confronted with a sometimes confusing variety of grouping plans.[12] Any discussion of pupil-grouping practices must eventually take into account certain deficiencies of the total school environment, and efforts to arrange better grouping schemes must also include efforts to bring better people and resources into the situation within which groups will be created and managed.

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[12] Harold G. Shane has identified thirty-two different plans. See his article, "Grouping in the Elementary School", Phi Delta Kappan, XLI, (April, 1960), pp. 313-319.

Emerging Patterns

There appears to be widespread agreement that flexibility in grouping practices is desirable. Some types of organization fail of their purpose because of their rigidity. If we accept the premise that different instructional activities may require different arrangements and elements, then the best plans will be those which insure flexibility in the use of time, space, personnel, and other instructional resources. Most of the emerging patterns of horizontal and vertical school organization represent, among other things, a conscious effort to achieve such flexibility in one way or another.

Informal Plans of Flexible Organization

Some of the common procedures for departing from literal self-containment in elementary schools include the voluntary exchange of functions, the combining of class groups, and the interchange of pupils for specific purposes, such as instruction in skills subjects. Each of these presumably simplifies the collective responsibilities of the teachers involved by reducing the complexity and range of duties and preparations for each of them. In each case greater flexibility is achieved because greater numbers of teachers and pupils are involved.

The literature indicates that the numbers of adults and children involved in any plan of horizontal organization will influence the kind and amount of flexibility that it is possible to achieve. It might be added that the greater the number and variety of subgroupings to be established, the greater the chances that each subgroup can be created on the basis of valid criteria rather than sheer necessity or circumstances. A number of emerging patterns of organization are based upon selection by such criteria and call, in some instances, for as many as six to eight teachers working in association with each other, in the interests of some 150 to 240 pupils for whom they have collective responsibility.

"Team teaching" is the phrase most commonly used to describe a number of organization patterns in which teachers are so joined together. Inasmuch as some of these organizations are scarcely different from conventional departmentalization while others are very loose federations of cooperating teachers, their variety renders precise definition and categorical explanation rather difficult. Furthermore, many of the so-called team-teaching plans might better be discussed in volumes about personnel organization than in a yearbook concerned with the individualization of instruction. Therefore, an effort will be made in the following section to describe team organization and realted patterns largely in terms of their implications for pupil grouping.

Nongrading and team teaching are contemporary phenomena with origins in a variety of historic efforts to individualize instruction, to achieve greater flexibility and efficiency in the arrangement of instructional groups, and to reorganize or upgrade teaching services to children. Although the term "team teaching" first appeared in the late 1950's, it can be related in some way to most of the organization plans discussed in chapter xii (and elsewhere in this volume). Perhaps its most direct antecedent was the "cooperative group plan" developed about 1930 by James F. Hosic and others.[13] In this plan, a group of teachers with differentiated responsibilities on either the primary- or intermediate-grade level worked cooperatively with the same group of children over several years. The children spent part of the day with each teacher, and each teacher was concerned in particular with one phase of the program. Although the literature is barren of references to the extent of the development and success of Hosic's plan, it seems likely that various current plans were influenced by it, at least indirectly.

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[13] See J. F. Hosic, The Cooperative Group Plan: Working Principles for the Organization of Elementary Schools. New York: Bureau of Publications, Teachers College, Columbia University, 1929. See also J. F. Hosic, L. T. Hopkins, and Others, The Cooperative Group Plan for the Organization of Elementary Schools. New York: Bureau of Publications, Teachers College Columbia University, 1931.

Multi-Age Classes

It was not so long ago that most school administrators held firmly to the view that "combination classes" (e.g., third-graders and fourth-graders with the same teacher) were to be avoided except in cases of financial or housing emergency.

How beliefs and convictions change! Perhaps through a growing understanding of the personal-social and academic needs of youngsters, perhaps, through experience in refinement of the theory and practice of nongrading, certainly because of the data reported by the Torrance Plan and team projects involving multi-age groupings, and as a consequence of deliberate inquiry into literature which pertains to the question, Anderson considers multi-age classes as the desirable, preferable arrangement.

It should be admitted that relatively few studies have as yet been conducted in school settings to test the foregoing views. Most school children have for many decades attended classes with their approximate age-mates, and research in pupil adjustment has tended to assume the correctness of this practice rather than to challenge it. However, the opening of this question provides an opportunity for teachers and others to take a careful look at the concept of "peer group" as it bears upon optimum school organization. An emerging view, deserving of study, is that individual differences, being as great as they are, a child may be most comfortable at one moment in the company of an older child with one or another interest or skill and at another moment with a younger child of different make-up. To restrict the possible choices to a narrow age range is to deny these likelihoods and to create what may be a very undesirable group situation.

Automation and Architecture

Two current trends have significant implications for pupil-grouping practices in the future. In the same stream of innovation that has led to new patterns of human organization in the schools, there have appeared the so-called "teaching machine" and a variety of engineering accomplishments that are changing techniques of school-plant construction. Among the latter are developments in illumination and light control, in acoustics and sound control, in portability or collapsibility in walls or separators, in furniture and equipment, and in extraordinary new materials. These combine to make it more feasible than ever before for architects to plan schools with great flexibility and to provide features that facilitate hitherto-undreamed patterns of pupil grouping. At least in some communities where these new resources are being put to the test, basically different patterns may be expected to emerge.[14]

As Goodlad has indicated, the teaching machine may eventually assume general responsibility for the fundamental skills, leaving to human teachers the higher-priority functions. Whether such machines would or should move into the homes, as he suggests, may be debatable; but it is clear that every school in the future will make fairly extensive use of such equipment within its own walls. This clearly indicates that the arrangement of groups for instruction whether within the conventional structure (teacher -by-teacher) or within team plans of some kind, will become a very different sort of problem.

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[14] A leading force in this field is the Educational Facilities Laboratories, Inc., a Division of the Ford Foundation.

There is also the probability that computers and record-keeping machines will assist teachers in keeping track of pupil progress and diagnosing their needs. These developments suggest that teachers in the future may base their decisions about pupil grouping upon far more reliable and systematic information than has thus far been available. This is indeed a far cry from the system in Rhodesia where the youngster has to be able to reach across the top of his head with his left arm and touch the right ear lobe before he can enter school.

Below and Curtin have reported that the upper middle class suburban school district appears particularly susceptible to segregation of high ability pupils, while urban districts have been in the forefront in establishing classes for pupils of very low ability.

Programs for the Gifted

Gallagher[15] has found that most of the administrative arrangements for gifted children take the form of some sort of grouping by ability for part of the day or for the entire day. Once this grouping has been accomplished, emphasis is placed on providing enrichment and increading intellectual initiative. These programs generally allow the students more freedom to plan their curriculum, to participate in class leadership, and to conduct individual projects. There is little pressure on the teacher to cover standard materials or to reach a predetermined goal by the end of a year. Occasionally, special subjects such as typewriting and foreign languages are also introduced at the intermediate level.

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[15] James J. Gallagher, "Study Project for Gifted Children", Office of the Superintendent of Public Instruction: State of Illinois, 1960, pp. 84-130.

The existing organized programs have, for the most part, enrolled gifted children who have already shown a high degree of efficiency in the school setting.

Elementary Programs

Existing elementary programs for gifted children stress intellectual grouping in varying degrees and for various parts of the school program. This grouping enables the easier adoption of enrichment procedures (approaches which stress the application of higher mental processes of creativity, critical thinking, evaluation). The procedure described as enrichment in the regular classroom suffers from the lack of special knowledges and skills of the classroom teacher and the limitations of the teacher's time and energy.

Secondary Programs

Secondary programs for the gifted also place emphasis on grouping by ability in subject areas. Those children of particularly high aptitude are often placed in special honors, sections, or seminars or classes so that they can make the most of their abilities. New curriculum ideas in such subjects fields as physics, mathematics, etc., which stress the use of the higher conceptual processes, also call for a realignment of students according to aptitude for such programs. Acceleration is practiced quite often at the secondary level.

Programs for Retarded

Dunn[16] has found that nearly all educable retarded children who receive special services do so in special day classes which are divided into primary, intermediate, and secondary levels. In some smaller school systems, especially in rural areas only one special class is operated. In such cases, pupils over the full age range of 6 through 16 years may attend. In a few large cities, special schools are operated for "educable" pupils. In both special schools and classes the trend has been to have the groups coeducational in nature. However, there are a few special schools, especially where the emphasis is on learning a trade, where the sexes are served separately. Under this plan, special attention needs to be given to the social adjustment of the adolescent as he relates to the opposite sex.

Some other types of organization are available. For example, while our residential schools for the retarded primarily serve the dependent and trainable persons, some educable children and youth are enrolled in special education programs in such facilities. For each educable child enrolled in a residential school there were 20 in special schools and classes operated by local school districts.

A recent innovation is itinerant teacher service for the educable mentally retarded. Under this plan retarded pupils remain in the regular grades. An especially trained itinerant teacher of the retarded tutors students individually two or three times a week, and serves as a consultant to the regular classroom teacher. The efficacy of this itinerant plan for the retarded has yet to be demonstrated.

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[16] Lloyd M. Dunn, Exceptional Children in the Schools, New York: Holt, Rinehart and Winston, Inc., 1963, p. 27.

Other Special Needs

Children with visual, auditory and other physical handicaps, as well as those with behavior problems and/or learning disabilities are commonly found in special class arrangements for at least part of the school day. Often, only the special instruction they require is provided in such groupings, and an attempt may be made to integrate some of their activities into the regular school program.

Taba has pointed out that grouping is one factor in creating classroom climate which deserves special attention. This point of view is also evident in the following guidelines which have been developed by the Los Angeles County Superintendent of Schools Office in its publication Guiding Today's Youth.[17]

Grouping as a Technique for Guidance

Grouping students according to ability, achievement, interest, or maturation can often be used as a guidance technique. A thoughtful plan of grouping can help each student develop his full potential. By narrowing the spread of differences in a classroom, teachers may focus their efforts more effectively. In the past, however, grouping according to an over-all classification of learners as slow, average, and rapid has resulted in several problems. The slow groups often developed poor morale for learning, as young people with personal and social problems tended to accumulate in these groups. Teachers' morale also is sometimes affected by such grouping, and community groups and parents often exerted continuous pressure to change the grouping of students. Because of the disturbances in staff and student morale which may result, plans for grouping are seriously weighed and continuously evaluated.

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[17] Los Angeles County Superintendent of Schools, Division of Research and Guidance, Guiding Today's Youth, (Los Angeles: County Board of Education) 1959.

Today, grouping is used more flexibly with deliberate focus upon students' specific needs. The size and nature of groups should vary with the purposes to be achieved and the content to be learned.[18] Sometimes students are grouped because they need review in specific fundamentals or skills in such subjects as mathematics or language arts. Other students are grouped together because they need new and enriched learnings. Students who are talented in science or literature, for instance, may develop creative activities in a special group. Their potential is not stimulated merely by more of the same experiences usually provided.

Students are often grouped together because they need specific experiences for their success in the future. Grouping is often based upon deliberate choices in line with their occupational and vocational aspirations. Glenn, for example, enrolled in Business English not because he was unable to understand English literature, but because he hoped to become part of a large manufacturing concern. Conferences with the school counselor and with his father convinced him that this course would suit his vocational goals better.

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[18] J. Lloyd Trump and Others, Images of the Future: A New Approach to the Secondary School, (Washington, D. C.: National Association of Secondary-School Principals, 1959); and New Directions to Quality Education, (Ibid., 1960).

In any plan of grouping, today's high school staff keeps these safeguards in mind:

- The staff makes sure that all students are given the common core of general education essential for citizenship.
- Sequences of specialized studies are provided so that students may pursue their interests and develop their potential to the maximum.
- Many opportunities for different groupings are offered so that each student is enabled to associate with and to understand those with family backgrounds and abilities different from his own.

CHAPTER II

THE CASE FOR AND THE ARGUMENTS AGAINST HOMOGENEOUS GROUPING

There is a recurring controversy between the advocates of homogeneous grouping and the advocates of more heterogeneous arrangements. In In evaluating whether one plan is better than another, we need to ask: "Better for whom and for what purpose?" Grouping for administrative and teacher convenience, on the one hand, may suggest a very different evaluative framework than grouping for student-oriented purposes. Grouping involves not only the convenient arrangement of numbers of students, but also the dynamic interaction patterns and the instructional methods employed.

Advocates of various grouping plans generally claim that within their particular organizational plans children do better academically and socially, that instruction is more individualized, that a climate is provided which develops leadership, and that success becomes possible for every child.

Opponents refer to the difficulty to the teacher, the problem of locating superior teachers who can meet the challenging requirements, the need for aides and extra in-service training, and to additional costs.[19]

Tillman[20] reflected the sentiments of those opposed to ability grouping as follows:

1. Teachers in ability-grouped situations often feel grouped.

2. Teachers who are assigned to "low" classes miss more school than do teachers assigned to "high" and "average" classes.

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[19] David Lewin, "Go Slow on Non-Grading", The Elementary School Journal. December, 1966, pp. 131-134.

[20] Rodney Tillman, "Is Ability Grouping Taking Schools in the Wrong Direction?", The Nations Schools, Vol. 73, No. 4, April, 1964. pp. 70-128.

3. Teachers often tend to teach the class as a group in ability-grouped situations.

4. Assignments of youngsters to ability groups is often influenced by the socio-economic status of the family.

5. Youngsters get undesirable labels in schools where ability grouping is practiced.

6. Parents put considerable pressure on children to get into and stay in "high" groups.

7. Teacher's attitudes toward their assignments greatly influence their relationships with pupils.

8. Ability grouping practices often strain staff relationships within a school.

9. Ability grouping reduces the opportunities for pupils to learn from one another.

10. Pupils academically damaged most severely by ability grouping are those in the lower half of the "high" group.

Olson[21] is also critical of ability grouping: "Longitudinal studies of children (that is, studies of the same children over a long period of time) demonstrate not only highly continuous growth in a single characteristic but also stability in the progress of one characteristic compared with another. Children in a given group do not all achieve at the same level in their school subjects. Moreover, each child's achievement level varies from subject to subject. This variability among children and in individual children continues over time. Remedial teaching does not change the picture of differential achievement that emerges as we study children at a given time and over an extended period.

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[21] Op. cit., p. 23.

Whether we believe that resemblances among children of the same family stem from inheritance, common experiences, or both, the fact is that similarities of about 30 to 40 per cent of paired differences in school subjects are accounted for by membership in a family. Thus only a limited amount remains for manipulation through grouping. The achievement of a boy in reading can be predicted about as well from the reading score of an older brother at the same age as by giving the child an intelligence test. Superficial differences in grouping are unlikely to alter basic potentials."

Goodlad[22] maintains that the goal of encouraging children of varying abilities to proceed at appropriate rates can be attained more readily by curricular differentiation than any plan of ability grouping per se.

Limitations of Grouping

Taba[23] has pointed out that grouping is one factor in creating classroom climate which deserves special attention. The chief purpose of these efforts is to make the instructional groups more homogeneous under the assumption that homogeneity in ability is a necessary condition for effective teaching and learning. It seems, however, that the arguments for both heterogeneous and homogeneous grouping as well as research on either rest on a limited analysis of what is involved. First, only the factors of intelligence and academic achievement are considered. This is insufficient even from the standpoint of accounting for important abilities.

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[22] Op. cit.

[23] Op. cit., pp. 168-169.

Second, the chief assumption underlying ability grouping seems to be that academic learning is facilitated when everyone in the group has a nearly equal capacity to grasp the content. This is a necessary condition for successful learning only if the program is uniform in content and pacing and uses closed methods of teaching. Both of these conditions are prevalent enough, but do not have to be so. When teachers can formulate open-ended learning tasks capable of being handled on several levels and can compose small groups following the lines of relationships and communication among the members heterogeneity becomes an asset rather than a handicap. Differences and independence in perception and thinking need not be abrogated, except under conditions which require a forced consensus as an end outcome, or under very standardized procedures. These differences can enhance the quality of perception by all members of the group, because they correct errors and steer the social process in accordance with felt requirement.

Third, these methods of grouping assume the homogeneity of ability enhances all varieties of learning. There are types of learning -- sensitivity to human relations being one -- in which a diversity of levels of perception and of the content of social learning add to the end product. Finally, those who favor the practice of homogeneous grouping completely overlook the rather grave social and psychological consequences: the effects on the self-conceptions of individuals, on group climate and, above all on social stratification in school.

The Mentally Retarded

Dunn[24] claims four major advantages for the kind of ability grouping which takes the form of special class placement for the educable mentally retarded child:

1) To provide a more adequate curriculum which stresses the development of social and vocational skills as well as the acquisition of skills in the basic tool subjects, 2) to enable more individual instruction since the special class enrollments are usually only about one half of that in the regular grades, 3) to remove the pressure on the retarded through reducing failure and providing a mental health approach, and 4) to enable the regular teacher to give more attention to average and bright students when the range of individual differences is reduced.

Sumption and Luecking[25] list the following advantages to grouping the gifted for instruction:

1. The gifted can work at their own speed and within their own abilities. The program can be planned to achieve these ends without their being obliged to wait for the slower students.

2. The gifted student can obtain a better perspective of his own worth, his actual potential, when he is with other students of superior ability; in a regular class he might feel superior to the others without having to put forth definite effort. Here, his abilities and potential can be challenged to a greater degree.

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[24] *Op. cit.*, p.33.

[25] Merle R. Sumption and Evelyn M. Luecking, *Education of the Gifted*, The Ronald Press Company, New York, 1960. pp. 224-226.

3. An enrichment policy for the special classes (or special schools) makes possible full learning experiences without pushing a gifted youngster beyond his depth socially and emotionally. Since children may be uneven in areas of development, special classes can offer them a greater degree of support and intellectual stimulation, while at the same time avoiding harmful effects of overacceleration, and habits of careless preparation for their studies.

4. In a special group gifted students can explore their ideas and activities and may experiment with various media of expression without sacrificing group acceptance as may be the case in the regular class.

5. The rich knowledge and experiential background of each gifted student spurs the individuals and the group to increased learning.

6. The special class makes feasible the hiring of a teacher who is specially qualified to teach gifted students.

7. Special classes can provide for rapid progress as well as an enriched learning environment; more challenging activities can be developed by a flexible program.

8. Grouping the gifted provides better opportunities for developing leadership and the ability to follow as the students work both together and individually.

9. Grouping gifted students into one section is beneficial to the other students of a school too; average students are thus allowed greater opportunities to exercise the leadership of which they are capable.

Traditional Objection

The traditional objection to grouping students on the basis of intellectual ability, even when as in any worthwhile program other factors are considered, has been that such grouping is undemocratic in that it extends special privileges to some students. These special privileges, if that is what grouping offers, have been extended to crippled children, to youngsters who need sight-saving classes, to those hard-of-hearing or deaf, to delicate children, and to those who cannot learn very much - not everyone immediately wishes to take advantage of those special privileges. Perhaps the reason is related to the fact that such children have fewer advantages, have less of the natural endowments than most. "Equality" of treatment, that is, educational programs planned for average children, can be seen to be totally ineffective for those atypical youngsters who by reason of heredity or accident are patently unable to benefit from such programs. When the differences appear at the positive end of the scale, cries of concern about democracy, equality, and fair play, come forth.

Someone said long ago that there is nothing quite so unequal as the equal treatment of unequals. Unequal treatment appears acceptable when the inequality is observable as a deficiency; when it is a proficiency somewhat beyond what most humans possess, there are objections to providing special education for its development. A gifted child typically is not a pathetic-looking individual who immediately arouses sympathy among those who see him. People are unfortunately less prone to accept the fact that he too requires help and additional educational opportunities to develop to his fullest, for the good of the society as well as for his own benefit.

Grouping by Sex

Lyles,[26] an advocate of single-sex classes, maintains that the following advantages accrue to all-boy and all-girl classes:

1. There are fewer serious discipline problems. The behavior of the boys in separate classes seems more normal and is more acceptable to teachers.

2. The students are much happier and display a greater interest in all subject-matter and skill areas.

3. There is better attendance because the pupils like school more.

4. Children who have been withdrawn become more outgoing, more confident. (This is true of both boys and girls.)

5. Students are more willing to ask questions if they do not understand something and feel freer to discuss ideas which otherwise might be embarrassing to them.

6. Boys are more thoughtful and considerate of each other. They seem to want to help each other when someone is having difficulty.

7. Competition between the sexes is eliminated, and there is an excellent opportunity to establish the idea of working against one's own record rather than competing with others.

8. There is evidence of more cooperation within an all-boy or an all-girl class. A tremendous _espirit de corps_ develops within the classes.

9. The lack of distractions from the opposite sex results in better work habits.

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[26] Thomas B. Lyles, "Grouping by Sex", _The National Elementary Principal._ Vol. XLVI, No. 2, November, 1966. pp. 38-41.

10. Motivation can be developed much more easily because it is not necessary to gear class work to the interests of both sexes. Instructional materials can be selected in terms of the particular characteristics and interests of the sex being taught. (This is especially true in reading and science.)

11. Boys take part more freely in art and music and do better work in foreign languages when they are in separate classes.

12. There is greater participation in class activities.

13. Boys accept all phases of language arts instruction without complaint when there are no girls present. Boys who are below level in reading work harder in order to be nearer the level of their classmates.

14. It is much easier to do a good job in physical education -- and this is significant in view of the importance of the first twelve years in developing physical skills.

15. The retention rate dropped in our entire school enrollment from 10 percent in 1961-62 to 3 percent in 1962-63.

The Case for Age

Grouping by age has been attacked for maintaining the "lockstep" in education -- the same pace for everybody. It can be argued, however, that grouping by age produces greater homogeneity on more things for a group as a whole than does any other single factor. The chronological-age method is claimed to be a simple, defensible, and explainable technique for bringing manageable numbers of children into contact with instructional materials and with an appropriate number of teachers.

Against Age Grouping

Perhaps to be especially noted in the preliminary data from multi-age classes are the references to social benefits. Sometimes lost in the discussion of graded organization is the fact that an artificial and unnatural homogeneity of chronological age and academic experience is engendered by the arrangement of one-grade per-class. In many ways this homogeneity encourages an unhealthy attitude within each age group toward other age groups, especially those who are younger and hence have less status. It also causes each group to lose some of its perspective on human experience by narrowing the social atmosphere within which the children live.

Some educators see special advantages of mixed ages in these times when families are smaller and most teachers are women, reducing the boys' chances for identifications.

Joining the advocates of grouping are Ilg and Ames[27] who base their classifications on a determination of "behavioral age". They claim that "The speed and effectiveness with which most teachers can teach, and most children can progress if the grouping is right and if the group is not held back by children who do not belong with that group, would be a revelation to most school administrators.

Our suspicion, as we have already observed in our North Haven Study, is that a good grouping can not only satisfy the individual child, but it can generate its own energy and suggest in what line more successful programming might be developed. It is one thing to place children correctly, but it is just as important to provide a meaningful experience for them once they have been placed. It is to this area of education that we would hope the principal could give major time and attention.

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[27] Op. cit., p. 351.

We would like him to try to find out why so many first and second graders dislike school. This information can best be secured from the parents, since a child does not necessarily reveal his dislike at school. Will proper placement allow for a child to relate himself more positively to his school experience? Also might not a more meaningful experience show up if the child truly enjoyed school?

With good grouping and good programming we would anticipate not only an enjoyment of learning, but also more rapid learning. Thus a child might accomplish in a half day what it had previously taken him a full day to accomplish.

This more rapid learning at the child's own level could release time to put what he has learned to better use. Thus we might anticipate that only half of the day would be used for academic subjects in the earlier grades and that we might return to the old private school idea of school from 9 to 1 o'clock or thereabouts.

As many experienced principals know, in the final analysis, effective teaching depends largely on a good teacher teaching a group of children who are ready for the level and kind of instruction being given. Sometimes it is as simple as that."

CHAPTER III

RESEARCH FINDINGS

Research studies designed to evaluate various types of grouping practices have proliferated voluminously in recent years. As the number of grouping studies grows, the inconclusiveness of the research findings becomes more apparent. The weakness in many of the studies is that they have been poorly designed as experiments. Specifically, the difficulties of equating and synthesizing research findings stem from the following problems:[28]

"1. The studies vary considerably in scope of aim and purpose.

2. The studies differ in the nature and basis for determining "homogeneity".

3. The studies differ in the number of students, the number of groups and the size of the classes involved.

4. The studies differ in their duration - ranging from a semester or less to a year or more.

5. The studies differ in the adequacy of the selection bases and the means of matching experimental and control groups.

6. The studies differ in the"treatment", i.e., differentiation of curricula and methods of teaching.

7. The studies differ in the deployment of teachers in various groups.

8. The studies differ in the instruments and techniques used in evaluating changes in students.

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[28] Miriam L. Goldberg, A. Harry Passow, and Joseph Justman, The Effects of Ability Grouping, Teachers College Press, Columbia University, New York, 1966, pp. 17-21.

9. The studies have generally failed to assess the effects of grouping on teachers and administrators.

Many of the issues concerning grouping, therefore, remain unresolved, and many questions are still unanswered. Insufficient and conflicting data are being used to support partisan views concerning the consequences of grouping rather than to resolve the persistent issues."

Ekstrom's observations, arising out of her review of the literature from 1920 to 1958, are relevant here.[29]

"The differences in number of favorable and unfavorable studies should not be considered too seriously since these studies differ widely in quality, purpose, and significance. Inability to control the type of teaching, and failure to provide differentiation of teaching according to ability levels are important weaknesses in most of these studies. Another factor which has affected these studies has been poor experimental design, especially the use of matched pairs of subjects based on unwarranted assumptions of similarity. The use of available data, rather than setting up careful experimental controls, has made many studies less effective."

Borg[30] amplifies these critical evaluations as follows:

A critical evaluation of studies concerned with ability and achievement reveals a number of weaknesses. Perhaps the most serious of these is that many studies are of only one year duration. In most of these studies the ability grouping method is the "new" or "experimental" treatment.

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[29] Ruth B. Ekstrom, Experimental Studies of Homogeneous Grouping, A Review of the Literature, Educational Testing Service, Princeton, New Jersey, 1959.

[30] Walter R. Borg, Ability Grouping in the Public Schools, Madison, Wisconsin, pp. 19-20.

This situation tends to lead to a significant Hawthorne Effect which may well explain all or most of the differences found in these studies.

Another weakness of many of these studies is the use of inadequate analysis techniques. Many of the early studies and some of the more recent ones report no tests of statistical significance but merely indicate that one or the other group did "better" or "achieved more".

Billett[31] in one of the early reviews of research in this field indicated that, of the studies reported between 1910 and 1928, only four made reasonable attempts to control pertinent variables. Other investigators have been content to make a single comparison between ability grouped and random grouped samples and have made no attempt to appraise possible differential effects of ability grouping versus random grouping for pupils at different ability levels. As there is no reason to assume that ability grouping affects superior, average, and slow pupils in the same way, these overall comparisons can have little real meaning. It is at least hypothetically possible, for example, for superior pupils to make much greater gains in ability grouped classes, average pupils to do equally well in either grouping situation, and slow pupils to make much greater gains in random grouped classes. In this case, if pupils of different ability were lumped together for analysis, the lower relative gains of the slow pupils would cancel out the higher gains of the bright pupils and lead the investigator to conclude that the two grouping systems brought about no difference in achievement. Thus, such gross comparisons can give us little insight into what really happened in an experiment.

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[31] R. O. Billett, "A Controlled Experiment to Determine the Advantages of Homogeneous Grouping", Educational Research Bulletin, VIII, 1928, pp. 133-40.

A design weakness in many ability grouping studies is the use of matched pairs of subjects. Many of the deficiencies of matching techniques such as the tendency for matched groups to be biased with respect to variables other than the matching variable, and the biases introduced by loss of cases because of non-random factors, were generally unknown when many of the earlier studies were carried out. These deficiencies, however, have been generally recognized by researchers for the past fifteen years, but, nevertheless, a study reported in 1960 employed matched pairs which resulted in the loss of about one-half of the cases involved in the experiment.

A number of other studies have used techniques for selecting pupils for ability grouped classes which bias the sample and seriously distort the findings.

Westmayer[32] appears to have introduced a similar bias into his research. He compared superior pupils who elected to take a special advanced problem class in science with pupils of similarly high ability in heterogeneous science classes. Although pupils were matched on the basis of grade point average for previous high school work, it would appear that the factors that lead some pupils to volunteer for an advanced problems course are related to motivation and interest in science and therefore would be expected to be related to science achievement. The results of this study showed that the homogeneous group selecting the advanced problems class obtained significantly higher scores at the end of the study on a standardized achievement test. It is impossible to determine, however, how much of this difference was due to ability grouping, and how much was due to sampling bias. In evaluating research projects in this area, it is probably safe to assume that when pupils who elect to take a special class are compared with equally intelligent pupils who have not elected to take the class; or when pupils are placed in special homogeneous groups because they possess special characteristics not possessed by pupils in the control group, the sampling bias so introduced will account for much of the difference found.

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[32] P. Westmayer, "Just Stand Out of the Way!", School Science and Mathematics, LVII, 1957, pp. 643-46.

Drews' study,[33] although very well designed, had one limitation. This was that the achievement measures used were aimed primarily at measurement of facts, while the type of program that Drews was attempting to stimulate might be expected to develop many aspects of achievement not measured by a fact-oriented test. The study collected other data that were aimed at measurement of these higher goals, but this weakness could have been further overcome by using an achievement battery such as the Sequential Tests of Educational Progress, which places more emphasis upon higher cognitive processes than does the California Achievement Test. However, Drews' study is exceptionally well done and probably provides more sound scientific evidence on the effects of ability grouping at the secondary level than all previous research combined.

With these reservations in mind, we have included here 1) a chronological tabulation of some of the representative studies and 2) a discussion of some of the significant findings in this active area of research.

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[33] E. M. Drews, The Effectiveness of Homogeneous and Heterogeneous Ability Grouping in Ninth Grade English Classes with Slow, Average, and Superior Students, unpublished manuscript, Michigan State University, 1962.

The following tables are excerpted from a review of the literature on ability grouping compiled by Borg.[34]

ABILITY GROUPING

TABLE 2

ABILITY GROUPING STUDIES CONCERNED WITH ACHIEVEMENT AT THE ELEMENTARY SCHOOL LEVEL

Study	Grade Levels	N	Length of Study	Grouping Levels	Grouping Criteria	School Subjects Measured	Results	Remarks
Jones, McCall (1926)[a]	3-7	67 Pairs	2 years	Superior only	IQ	Reading Arithmetic Spelling	Slight advantage for AG sup. groups, not sig.[b]	AG pupils elected to enter accelerated classes, thus biasing sample. Matched pairs used. Curriculum differentiated for AG pupils.
Worlton (1926)	4-7	3700 AG and RG	1/2	3	IQ	Reading Arithmetic Spelling	AG classes made greater gains in composite achieve. score (no mention of stat. sig.)	Steps taken to avoid differentiation of curriculum for different ability levels.
Baird (1927)[a]	4-8	325 in AG + 10 classes RG		3	Ach. Test	Gen. Ach.	8 of 10 control classes achieved more (no mention of stat. sig.)	
Walton (1928)	4-7	1466		IQ Levels	Teacher Judgment and IQ	Reading Spelling Arithmetic	Slight advantage for AG sup. groups on composite achieve. score (no mention of stat. sig.)	1466 pupils above 90 IQ were tested. Pupils were classified into 6 categories each with a range of 10 IQ points. Curriculum differentiation implied but type of adjustments not described.
Bonar (1929)	1	96	1 year	2	IQ and Teacher Judgment	Reading	Results on objective achieve. test favored RG. No data on stat. sig.	The grouping system used did not result in really different ability groups. The median IQ of the high group was 104, the low group 98 and the het. group 99.
Dvorak, Rae (1929)	1	20 Pairs	1 year	2	IQ	Reading Spelling	No clear-cut dif. bet. AG and RG. Two stat. sig. dif. in reading scores favored AG.	The grouping system used could not be expected to reduce the variability of the class by more than a few percent.
Gray, Hollingsworth (1931)	Age 7-9	56 exp. 36 control	3 years	Superior only	IQ (S.B) Above 130	Reading Arithmetic Nature History Language	No stat. sig. dif. found in regular school subjects. "Enrichment" subjects studied by AG pupils not measured.	AG pupils did extra work in some subjects and studied some topics not covered by RG pupils.
Barthelmess, Boyer (1932)	4-5	297 Pairs and 268 Pairs	1 year	3	IQ	English Reading Geography Arithmetic	Total AG sample was sig. higher on total achieve. for both replications. AG pupils at all 3 ability levels made greater gains but sig. level of these gains not reported.	Study involved 2 replications. Used matched pairs which resulted in loss of up to 53% of AG pupils and 77% of RG pupils.
Hartill (1936)	5-6	1374	1 year	3	Ach. test	Gen. Ach.	Overall comparisons bet. AG and RG pupils showed no stat. sig. dif. Sup. RG pupils and av. AG pupils made greater gains. No dif. between slow groups.	Well controlled study using counterbalanced design, to control group dif. Differentiated course of study used with AG sup. pupils being given enrichment program rather than acceleration.
Rankin, et. al. (1936)	3-6	About 500 in each plan	2 years	3	IQ	Reading Arithmetic	On composite score of 4 reading tests, vertical plan best at all ability levels. Detroit plan higher than RG for composite and bright pupils but these 2 plans about same for av. and slow pupils. In arithmetic Detroit plan best, vertical plan next and RG lowest for all ability levels. Dif. greatest for sup., smallest for slow groups.	Two dif. AG plans compared with RG plan. Vertical plan cut across grade levels to form AG; Detroit plan grouped within grade levels.
Kvaraceus, Wiles (1938)	3	75	1 year	3	Ach. test	Reading English Arithmetic	"Better than av. pupil growth", no mention of stat. sig.	Pupils grouped separately in reading, English, and Arithmetic and grouped het. rest of day. Major effort made to differentiate curriculum. No control group.

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[34] *Op. cit.*, pp. 12-15.

ACHIEVEMENT-RELATED VARIABLES

TABLE 2 (continued)

Study	Grade Levels	N	Length of Study	Grouping Levels	Grouping Criteria	School Subjects Measured	Results	Remarks
Russell (1946)	4-6	278 exp. 248 control	2 years	3	Reading Ach.	Reading	No stat. sig. dif. in gains for either the entire groups or for pupils at dif. ability levels.	Involves AG in reading only with pupils in het. groups for rest of school day. A well designed study.
Edmiston, et. al. (1949)	5-6	462	1 year	See Remarks	IQ Range	Reading	Wide range group made sig. greater reading gains.	Compared "wide range" groups (IQ Range 41) and "narrow range" groups (IQ range 29). Curriculum not differentiated.
Husen, Svensson (1960)	5-6	2755	2 years	2	School marks based on Standard Test	Reading Grammar Spelling Arithmetic	As analysis was broken down by treatment, social class, and ability level, a brief summary of results is not possible. Few sig. dif. found bet. treatments for pupils of comparable ability.	This study was carried out in Sweden.
Provust (1960)	4-6	254	1 year	3	IQ	Arithmetic	Overall comparison gave sig. greater gain for AG. Analysis by level showed AG sup. made greater gains. No dif. bet. AG and RG av. or slow pupils.	Experimental group in AG class for arithmetic only; in RG class for rest of day. Study used matched pairs.
West, Sievers (1960)	5-6	16 exp. 16 control		Superior only	Teacher Judgment and Ability Test	Language Art and Arithmetic	Mean gains of 2 to 5 months for AG over RG pupils.	Matched pairs design. Use of teacher judgment probably introduced bias favoring experimental group. Experimental group was in special AG class half day and RG class remainder of day.
Daniels (1961)	Junior School 1-4 yrs.	About 500 cases. Varies from year to year.	4 years	3	IQ and previous grades	English Reading Arithmetic	16 dif. bet. means for one pair of schools, 4 for another pair of schools. All 20 reported sig. favoring RG schools. No breakdown of data by ability level.	No data given on curriculum differentiation in AG schools. Groups matched for mean and SD of IQ. Author apparently used one-tailed test of sig. as CR's as low as 1.75 are reported sig. at .05 level.
Goldberg, et. al. (1961)	4	2219	1 year	5 See Remarks	IQ	Reading Arithmetic Language Arts, Work Study	Of 105 comparisons, there were 11 that were stat. sig. 10 of these favored "broad range" patterns i. e. het. grouping.	5 ability levels combined into classes to provide 15 patterns differing in ability levels and degree of hom. Curriculum not differentiated.
Koontz (1961)	4	191 to 231 for dif. subjects	1 year	5	Arithmetic Reading Language	Arithmetic Reading Language	RG sample achieved sig. more in reading and arithmetic. No sig. dif. in language. No sig. interaction bet. treatment and level.	AG and RG pupils matched on initial achieve. Analysis of variance used to analyze results. Hawthorne effect probably favored AG.
Simpson, Martinson (1961)	5-6	295 in grades 5-6	1 year	Superior only.	IQ (SB) Above 130	Arithmetic Reading Writing Listening Social Studies	Both the special enrichment group and special hom. group achieved sig. more than control group on gen. ach.	This study involves a wide variety of treatments for sup. pupils in grades 1-12. All treatments are compared with control groups but treatments are not compared with each other.

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[a] Taken from Ekstrom, (1959). Primary source not available.

[b] Abbreviations:

AG = ability grouped
RG = random grouped
stat. = statistical, statistically
sig. = significance, significant
sup. = superior
av. = average
dif. = difference(s), different
hom. = homogeneous
het. = heterogeneous
ach. = achievement (also achieve.)
bet. = between
gen. = general

TABLE 3

ABILITY GROUPING STUDIES CONCERNED WITH ACHIEVEMENT AT THE SECONDARY SCHOOL LEVEL

Study	Grade Levels	N	Length of Study	Grouping Levels	Grouping Criteria	School Subjects Measured	Results	Remarks
Theissen (1922)	7	65 to 74 classes	1 sem.	6	IQ	Arithmetic Reading Language	Compares AG sections at dif. ability levels rather than comparing AG and RG classes. The poorest of the top IQ classes achieved less in both arithmetic and language than the best of the bottom IQ classes.	Demonstrates the importance of teacher dif.
Cook (1924)	9-10	495	1 sem.	2	Past Grades	English History Geometry	No dif. bet. AG and RG in English. Sup. AG better in history, poorer in geometry. Slow AG poorer in history, better in geometry.	
Moyer (1924)	9		1 sem.	3	IQ	Algebra Latin	Sup. AG better in Latin. Av. AG better in both subjects. No dif. bet. slow AG and RG.	No data on stat. sig.
Purdom (1924)[a] and (1929)	9		1 sem.	3	IQ	English Algebra	No dif. bet. AG and RG.	
Woody (1924)	9	51 Matched Pairs	1 sem.	3	IQ	English	No dif. bet. AG and RG. Results not broken down by ability level.	Used matched pairs.
Martin (1927)[a]	7		1 year	3	IQ	General Achieve.	No sig. dif. bet. AG and RG on general achievement test.	Used matched pairs. Teachers told not to differentiate the curriculum.
Van Wagenen (1927)[a]	7-8	186		Superior Only	M. A.	General Achieve.	No sig. dif.	
Billett (1928)[a]	9		3 years	3	IQ	English	No sig. dif. Largest dif. favored AG slow pupils.	
Holy, Sutton (1930)[a]	9		1 sem.			Algebra	AG made greater gains.	
Fowlkes (1931)	7				IQ	General Achieve.	AG gained slightly less than RG on general achieve. test.	

ACHIEVEMENT-RELATED VARIABLES

Rankin (1931)	7	730	1 year	3	C. A. IQ and Teacher Judgment	English Arithmetic Gen. Sci. Soc. Sci.	Slow and Av. achieved more in AG. Sup. achieved more in RG. No dif. in results for dif. school subjects.	
Herr (1937)	7-8	97	1 year	Superior Only	Past achieve. IQ and Teacher Judgment	English History Plane Geometry, Chemistry and general information.	Dif. in American History and general information favored AG.	Matched pairs design. AG accelerated to cover 2 years work in 1.
Justman (1954)	7-9	79 to 83 Matched Pairs	2 years	Superior Only	IQ Above 130	Math. Science Soc. Stud.	AG pupils achieved sig. more at .01 level in all 3 school sub. at end of study. No evidence that groups were comparable at beginning of study.	Matched pairs design. This study is biased in favor of AG as highly motivated pupils selected for AG leaving less motivated pupils in RG. AG completed 3 years of Jr. H. S. in 2 years.
Wilson (1959)	9	96 Pairs Superior 48 Pairs Average	1 year	2 Superior and Av.	IQ and Teacher Judgment	Soc. Stud. Reading Writing Use of Sources, Problem Solving, Critical Thinking.	There were not stat. sig. dif. in gains made by pupils in AG and RG classes.	Pupils were grouped in special combined English-Social-Studies classes only. Sup. group IQ's above 115; av. group 100-110; no slow group studied.
Passow, Goldberg, and Link (1961)	7-9	112	3 years	Superior Only	IQ	Math.	Accelerated gifted pupils achieve. sig. more in math. than enriched gifted pupils or control group.	Used 4 matched homogeneous groups of gifted pupils. Tested effectiveness of dif. cur. adjust. for homogeneous gifted groups.
Simpson, Martinson (1961)	8 11-12	436 (sec.)	1 year	Superior Only	IQ (S. B.) Above 130	Arith. Reading Writing Listening Science Soc. Stud.	Special. hom. classes at each grade level achieve. sig. more than RG controls.	This study involves a wide variety of treatments for sup. pupils in grades 1-12.
Drews (1962)	9	432	1 year	3	IQ Reading Skills, Language Skills	Problem Solving, Reading, Language, Critical Thinking	No stat. sig. dif. bet. AG and RG pupils on any of the ach. measures.	Carefully designed and executed. The only previous study which compares programs that provide extensive differentation of the curriculum for both AG and RG pupils.

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[a] Taken from Ekstrom (1959).

Abbreviations:
AG = ability grouped
stat. = statistical, statistically
sup. = superior
dif. = difference(s), different
bet. = between
RG = random grouped
sig. = significance, significant
av. = average
hom. = homogeneous
ach. = achievement (also achieve.).

Selections from Borg's review of these studies follow:

"Hartill's[35] research is the only study found in the area of ability grouping in which a counterbalanced research design has been used. This design has the great advantage of cancelling out differences between experimental and control groups because each pupil is measured in both treatments during the two phases of the study. Hartill's design also controlled teacher differences, by having the same teachers move ahead one-half grade so that within a given school, the same teachers would teach both homogeneous and heterogeneous classes. Hartill concluded that a homogeneous plan was superior because bright pupils did nearly as well on the fundamentals and in addition had time to study the enrichment materials, average pupils gained significantly more, and slow pupils did just as well under this system.

Another of the early studies that involves large samples and gets at basic questions with a reasonably sound research design was carried out by Rankin, et. al.[36] This study involved about 500 pupils in each of three grouping plans, and compared achievement gains on four reading tests and three arithmetic tests over a two-year period. The three grouping plans used were: 1) the "vertical plan" in which pupils were grouped on three ability levels combining as many as three half-grades to make up a class, 2) the "Detroit plan" which also employed three ability levels, but did not cut across grade lines, and 3) the "mass instruction plan" in which no attempt was made to establish homogeneous groups.

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[35] R. W. Hartill, Homogeneous Grouping, Bureau of Publications, Teachers College, Columbia University, New York, 1936.

[36] P. Rankin, C.T. Anderson and W.G. Bergman, "Ability Grouping in the Detroit Individualization Experiment", Yearbook National Society for the Study of Education, XXXV, 1936, Part I.

The results of this research are given in terms of gain scores over a two-year period. Gains are given for all pupils on each of the tests and are also presented for bright, average, and slow groups separately. Although the research report presented no data on statistical significance, the information provided is sufficient for calculation of t-tests between some of the final means. These t-tests were calculated for the Stanford Reading Test, which was weighted about half of the composite reading score. The results on the Stanford Reading Test comparing all pupils regardless of ability levels showed the vertical plan to be superior to both the Detroit Plan and mass instruction plan with the differences significant beyond the .01 level. Differences between the Detroit and mass instruction plan were not statistically significant. When comparing bright pupils only on the Stanford Reading Test, the results showed that the vertical plan resulted in greater gains than the other two plans, with these differences also significant at the .01 level. The pattern was somewhat different, however, for the slow group. Slow pupils gains under the vertical plan were significantly higher at the .05 level than under the Detroit plan, but were not significantly different from the mass instruction plan. Again, the Detroit and mass instruction plans were not significantly different from each other."

Among the more recent studies, the work of Daniels[37] is one of the most extensive at the elementary level. In this study of four British junior schools (grades 2-5 in our system), two employed three-level ability grouping based on IQ and two employed random grouping. Although little information is provided on the extent of curriculum adjustment in the ability grouped schools, the report indicated that the four schools had comparable curricula and the random grouped schools used whole group instruction rather than enrichment or intraclass grouping. Schools A and B employed random grouping while schools C and D employed ability grouping or "streaming" as the English call it. Schools A and C were found to be comparable on a number of pertinent variables as were schools B and D. Group matching procedures were used to equate the groups for mean and standard deviation of IQ. This matching resulted in losing relatively few cases. Three achievement areas; reading, English and arithmetic, were tested at the start of the study and at intervals during the study. For schools A and C, the combined number of cases for different years ranged from 262 to 297. For schools B and D the combined N ranged from 197 to 227.

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[37] J. C. Daniels, "The Effects of Streaming in the Primary School", British Journal of Educational Psychology, XXXI, 1961, pp. 69-78.

In comparing mean achievement differences in the three subject areas between school A and school C, Daniels reported all 16 critical ratios between the two treatments at various intervals ranging from a half year to four years to be statistically significant. All of these differences between means were in favor of school A, the school that employed random grouping.

Another recent study by Goldberg, et al.,[38] is by far the most extensive project to date aimed at evaluation of ability grouping per se, that is, without any attempt at adjustment of the curriculum for groups of different ability levels or degrees of homogeneity. This research was carried out in the New York Public Schools starting in spring of 1956. Subjects were selected from the fourth grade level. Five ability levels were identified, ranging from Group A with IQs of 130 or higher to Group E having IQs of 99 and lower. Classes were organized so as to contain different combinations of the various ability levels. For example, Pattern 1 contained only pupils with IQs of 130 and above (Group A); Pattern 2 included pupils from both groups A and B; Pattern 3 included pupils from groups A, B and C and so on. A total of 86 classes were formed which were classified into 15 patterns representing different combinations of pupils at the five IQ levels. A wide range of measures were administered to the sample including academic achievement in reading, arithmetic, language arts, work study skills as measured by the SRA Achievement Series, and science and social studies as measured by the Stanford Achievement Tests. Findings of this study in general indicate that when no attempts are made to adjust the curriculum for different ability levels, the process of narrowing the ability range in the classroom is unlikely to raise pupil achievement.

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[38] Miriam L. Goldberg, et. al., "Social Consequences of Special Education for the Talented", The Education Digest, XXIV, 1958, pp. 11-14.

The findings of this study indicate that achievement was influenced more strongly by the teacher and group differences in individual classrooms than by the ability range of the class. Advocates of heterogeneous grouping have often argued that the presence of superior pupils tends to lead to greater achievement by pupils of lower ability. This contention was tested in Goldberg's study and it was found that only in science was the presence of gifted pupils consistently related to greater increments for the other four ability levels. In other school subjects measured, the presence of gifted pupils was not related to greater achievement gains for non-gifted pupils.

A further analysis of the data was accomplished by combining the 15 ability patterns into three broad categories: narrow range, medium range, and broad range classes. An analysis of variance indicated that the ability range in the classroom had a significant bearing on the achievement in social studies, reading comprehension, vocabulary, arithmetic, and total average achievement; while science, language arts, and work study skills were unaffected by the range. In the six academic areas affected, overall comparisons showed greater gains for pupils in the broad range classes as compared with the medium or narrow range patterns. When each ability level was taken separately, the effects of range were inconsistent, although revealing some significant differences. Of the 105 possible comparisons between pupils in the five ability levels, the three range patterns and the seven academic areas, only 11 reached significance, and in 10 of these the broad range was superior to either or both of the other two ranges.

This study also explored the question of whether the pupil's position in his group in terms of ability was related to his achievement. This is an important question because one of the commonly used arguments against ability grouping is that it deprives the slow pupils of the chance to learn from more able classmates. The analysis showed that in most subjects the presence of one or two levels of more able classmates and no slower ones did not have any positive effect upon achievement.

The research carried out by Goldberg[39] and her associates is very well designed and involved a thorough and sophisticated analysis that deals with most major questions concerned with class ability level and degree of heterogeneity as it relates to achievement.

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[39] Miriam L. Goldberg, A. Harry Passow, and Joseph Justman, The Effects of Ability Grouping, Teachers College Press, Columbia University, New York, 1966, pp. 160-169.

When the overall results of the study are considered, one must conclude that variations in the ability level, the ability range, and the position of individual pupils within the ability range in classes where no specific curricular adaptations are made, has little effect upon pupil achievement. In other words, ability grouping per se offers no achievement advantages over random grouping and appeared less effective than broad range grouping under the conditions present in Goldberg's study. This is one of the very few areas related to ability grouping in which scientific evidence from an extensive and well-designed study seems to have presented a clear and reliable answer.

Goldberg's discussion of findings follows:

Effects of Grouping on Academic Achievement

For all the variables studied, the effects of grouping, per se, were, at best, minimal. Certainly, differences in achievement growth over the two-grade span did not support the common wisdom that narrowing the ability range or separating the extreme groups from the intermediate groups enables teachers to be more effective in raising the pupils' achievement level. Not many teachers apparently took advantage of the narrower range to do the very things which they claim such grouping makes possible. On the contrary, although the achievement differences among patterns of varying ability range were small, overall observed increments tended to favor the broad range. The pattern of broadest ability spread appeared to be most consistently associated with greatest academic gains for all pupils. However, no one pattern or combination of patterns was best for all pupils in all subjects.

Differential achievement growth in the several school subjects appeared to be more a function of membership in a particular classroom than of pupil ability, range, or position. But inspection of achievement gains by classroom seemed to reflect variability in emphasis which was more a function of teacher competency or interest than a result of carefully planned learning activities appropriate for pupils of differing intellectual capacities. In no instance could the size of achievement increment be attributed to the status of the pupils at the beginning of grade 5. In other cases, the greatest increments were in the subjects in which the highest initial scores were obtained by a particular ability level.

Nor did the ability level of the group appear to determine the amount of academic growth. On the total achievement battery, each of the five ability levels made almost identical gains, and for no level did the gains vary consistently with variations in range.

At least from the evidence of this study, teachers did not adjust the content and method of their teaching to any greater degree when confronted by narrower rather than broader ranges since no ability level consistently showed greater growth in classes of narrow as compared to broad ability range. However, where such adjustments were apparently made, as in classes for slow pupils in the narrow range, there was a tendency to teach less of certain subjects to slow pupils than was taught to brighter groups or in the broad-range classes. It would appear that for the lower ability levels, narrowing the range led teachers to set lower standards. And yet, pupils of comparable ability in the broad range appeared to benefit from exposure to the content probably intended for the brighter pupils as shown by the greater increments of low ability pupils in science and vocabulary when in the broad rather than the narrow range. Except for science, which apparently was emphasized more in classes where there were gifted pupils than in other classes, and arithmetic, in which low-ability pupils received more drill than did the other levels, emphasis upon specific subjects was made at the discretion of the individual teacher, regardless of the ability range in the classroom or of the starting point or the ability level of the pupils.

Therefore, one must conclude that simply narrowing the ability range in the classroom does not necessarily result in a greater differentiation of content or method and is not associated with greater academic achievement for any ability level. However, this study cannot shed any light on the effectiveness of ability grouping where specific, consistent curricular adaptations are made or where pupils are entered into classes on the basis of specific aptitudes or for purposes of covering a course of study not normally taught in a particular grade. Those studies which have found advantages in narrowing the range, especially for the gifted, have usually dealt with programs in which groups of gifted pupils were either accelerated through the standard sequence or were exposed to content not normally taught. In both cases, pupils not only "did as well" as others on the standard achievement tests covering the expected grade-level content, but also showed considerable knowledge of the additional material.

The only conclusion that may be drawn from this study is that narrowing the range of ability (on the basis of group intelligence tests) per se, without specifically designed variations in program for the several ability levels, does not result in consistently greater academic achievement for any group of pupils.

Ability Range and Teacher Effectiveness

The investigation of teacher effectiveness in teaching several subjects or several ability levels, though not related to the basic hypotheses of the study, revealed some provocative findings. The impact of the teacher's interest and/or competencies are clearly seen in the class-by-class analyses across various subjects and various ability levels. Unlike the common wisdom which depicts the elementary teacher as competent to teach all subjects to her pupils but better able to achieve this in narrower range classes, these findings point to a different conclusion.

Some teachers, handling several ability levels together, were more effective than were other teachers handling a single ability group. The variation among classrooms was greater than the variation among patterns when pupil ability was held constant. Those classes which showed greatest progress in one subject were generally not the ones which showed greatest in other subjects. Teachers seemed to emphasize one or two content areas more than others, and the area of emphasis bore little relationship to the initial status of the pupils. As mentioned above, gains were not necessarily greatest either in areas of initial pupil deficiency or in areas of strength, but instead seemed to be related to factors within the teachers. The low concordance among the achievement increments in the various school subjects raises some questions as to the ability of one teacher to handle the entire elementary school curriculum, especially for the gifted pupils. Although there were some teachers who did well in all subjects and others who did poorly, most teachers achieved better results in one or two subjects than they did in others.

The observation that teachers whose pupils show large increments in one subject are genrally not those whose pupils show comparable increments in other subjects requires some qualification. For the slow learner, the classes which ranked highest on increments in one subject were also those which ranked highest in all other subjects. Thus, for slow pupils, it seemed that a single teacher, capable of working with such pupils, could achieve comparable results across all subject areas. For the gifted level, on the other hand, no one teacher appeared able to provide comparably challenging work in the several subjects. These findings raise some serious questions about the adequacy of the one-teacher classroom, especially for the most able pupils, and suggest the hypothesis that exposing more able elementary school pupils to several teachers, with diverse subject matter competencies, would result in higher-level learning than results from narrowing the ability range but retaining one teacher for all the academic instruction.

Despite the fact that elementary school teachers believe it is easier to teach all subjects to a class of narrow ability range than to teach one subject to a class with a broad spread of ability, this study found the reverse to be true. Although it did appear to be easier to attain comparable results with fewer ability levels than with the broad range, most teachers were more successful in teaching a given subject to several ability levels simultaneously than in teaching all subjects to narrow-range classes.

Effects of Grouping on Nonacademic Variables

While narrowing the range or separating the extreme groups had, if anything, slightly negative effects on academic growth - thus refuting the contention that such administrative arrangements will ipso facto improve achievement - the findings also cast strong doubt on the equally often voiced contention that grouping will have negative effects on the self-attitudes, the social perceptions, and the interests of pupils.

In general, self-attitudes seemed to be rather more sensitive to grouping than were the other nonacademic variables, but the effects of narrowing the range or separating the extreme levels were to raise the self-assessments of the slow pupils, lower the initially high self-rating of the gifted, and leave the intermediate levels largely unaffected. The slow pupils also showed greater gains in their "ideal image" when the gifted were absent than was true when they were present.

One might argue that the presence of gifted pupils acted as a ceiling on the aspiration level of slow pupils for whom high aspirations would imply the unattainable wish to be like the gifted. Since, in broad range classes each of the four upper ability levels had at least some less able pupils against whom to measure themselves, their self-appraisals went up. The slow pupils, at the bottom of the distribution, were not only forced to recognize their relative inadequacy vis-a-vis their classmates but also tended to perceive the gap between themselves and the most able group as too large to bridge.

On none of the other nonacademic variables did grouping have any consistent effects.

The findings of the study lead to the conclusion that ability grouping, per se, produces no improvement in achievement for any ability level and, as an administrative device, has little merit. However, the study presents no evidence against employing special grouping procedures in situations where differences in content, learning pace, and materials are carefully planned. Since grouping does not appear to have undesirable effects on any of the nonacademic variables studied, it might well be an effective method of class organization for truly differentiated content. For example, if a group of high-ability pupils should be expected to begin elementary algebra in grade 6, then organizing a special class for such a purpose might well be desirable. The basis of selection for such a group would involve criteria deemed essential for success in the particular course.

Thus the evidence from this study does not suggest that ability grouping, or any other kind of pupil deployment, could not be used constructively for specific curricular adaptations. What the findings do suggest is that the planning and organization of such curricular modifications are the crucial factors, and that pupil grouping should follow logically from the demands of the instructional program. Simply confronting the teacher with a class of pupils of broad or narrow ability range and then expecting her to make appropriate changes in content and in pace leaves entirely too much to the particular expectations, competencies, biases, and interests of the teachers.

Generalizations About Slow Learners: Some Cautions

As pointed out earlier, the "slow" level in this study was actually a low-average one. Although their performances on almost all measures differed from those of the other pupils in the expected direction, they were not representative of the lower quintile on the total-ability scale. The presence of this "low" level rarely had any negative effects on the attainment of the more able. However, had these pupils been drawn from a lower portion of the ability continuum - with a mean ability level in the low 80's rather than in the high 90's - their effects on the learning of the more able might have been somewhat different. And conversely, the effect of membership in classes in the broad range might have proven less desirable for them. Therefore, the findings from this study suggesting that broad range classes result in better learning for all pupils must be interpreted with some caution since the lowest portion of the ability continuum was not represented.

The Self-Fulfilling Prophecy

Although the slow pupils showed greatest academic gains in the broad range, greatest gains in their self-estimates occurred in those groups in which the gifted were absent or the range narrow. In view of the low correlations between self-assessment scores and achievement, this finding is not surprising. It reinforces the conclusion that what pupils learn is at least as much a function of what teachers teach and expect of them as it is a function of pupil attitudes, self-perceptions, or, within limits, even tested intellectual ability. The increments in science and vocabulary for the slow pupils in the broad range suggest that some of the material probably intended for the brighter pupils "rubbed off" on the slower ones. But, although the slow pupils may have learned more in the broad range, they still maintained an achievement level below that of their brighter classmates, the only ones to whom they could compare themselves. Therefore, they saw themselves as less able, less self-satisfied, and less adequate as learners and as people than did their intellectual peers in low-average classes in the narrow range who learned less but were not frustrated by the constant reminder that they were at the bottom of the class.

The fact that pupils of relatively low ability can achieve quite successfully in classes where expectations are high suggests that teachers generally under-estimate the capabilities of pupils in lower track classes, expect less of them, and consequently the pupils learn less.

Considerable support for the effects of teacher expectation comes from studies carried out in England (Douglas, 1964). More able pupils placed in A stream (high ability track) classes tended to improve their scores between 8 and 11, while pupils of equal ability at age 8, who were in B streams (lower track) deteriorated. Pupils of lower ability placed in A streams at age 8 gained, while classmates of equal potential placed in B streams lost. In the A stream, the slower the pupil, the greater the improvement; in the B stream, the brighter the pupil, the greater the loss.

From the available evidence one might justifiably conclude the differential achievement of any given ability level is less a function of the specific grouping procedures employed than it is of the effect that the designation of such groups has on the expectations and the actual performance of the teacher, to wit, the self-fulfilling prophecy.

Criteria for Pupil Selection

While in the present study the five ability levels showed distinct differences on almost all variables, with the brighter groups tending to achieve more, show more positive self-estimates, and receive higher teacher ratings on all characteristics, there was a great deal of variability within each level. Some of the pupils in the middle and lower levels achieved as high or higher academic status than did some of the brightest pupils. Certainly a single IQ measure, as used in this study, is an insufficient basis for grouping pupils. First of all, a group intelligence test is not a sufficiently reliable instrument of individual pupil placement, even though it does appear to predict attainment with some consistency for groups. But even the most reliable intelligence measures explain at best only about one-third of the achievement variance, with the remaining portion due to factors other than those assessed by such measures. If ability grouping is to be used effectively to enhance the learning of pupils at all ability levels, information on factors other than IQ or even reading scores will be needed.

Current studies have indicated that a single IQ score fails to take into account the highly differentiated abilities even among young children. Those outstanding in verbal areas, for example, are not necessarily outstanding in spatial or quantiative thinking. Furthermore, the several abilities appear to be differentially developed in various cultural groups. These studies suggest that grouping pupils on the basis of specific cognitive abilities and providing instructional emphases in areas of special competence may be more effective than grouping on the basis of general academic aptitude. The organization of ungraded blocks in the elementary school, where pupils would work on especially prepared materials with their ability peers in specific subjects, shifting from high to low groups as their differential aptitudes dictate, might provide for more effective learning situations than appear to result from standard grouping procedures or from broad-range classes.

Such a procedure, or others which allow for a flexible organization, would eliminate some of the problems of fixed tracking. Even gifted pupils vary considerably in the age at which they reach their optimum level of academic functioning. Some demonstrate high ability early and generally, though not always, retain their superior status. Others, the so-called late bloomers, begin to show their special talents at later ages. Fixed grouping plans militate against both the precocious youngsters who cannot maintain their initial high status and those who show their brilliance at later ages.

General Conclusion

The general conclusion which must be drawn from the findings of this study and from other experimental grouping studies is that, in predominantly middle-class elementary schools, narrowing the ability range in the classroom on the basis of some measure of general academic aptitude will, by itself, in the absence of carefully planned adaptations of content and method, produce little positive change in the academic achievement of pupils at any ability level. However, the study found no support for the contention that narrow-range classes are associated with negative effects on self-concept, aspirations, interests, attitudes toward school, and other nonintellective factors. Therefore, at least in schools similar to those included in this study, various kinds of grouping and regrouping can probably be used effectively when they are designed to implement planned variations in content and method. The administrative deployment of students must, therefore, be tailored to the specific demands of the curriculum.

The study further suggests the need to reexamine the existing self-contained classroom organization in the intermediate grades and implies the need to experiment with other types of school organization which would bring pupils into contact with teachers who have particular competencies in the various school subjects. Such a reexamination is particularly important for pupils of high-level ability in one or more subjects. Flexible school organizations which will bring able pupils into contact with teachers who have special competence in specific areas and who can carry out carefully designed programs which provide more challenging and more advanced work may prove far more effective than simply narrowing the range and expecting the single elementary school teacher to make necessary curricular modifications and be equally effective in all the subjects of the curriculum.

Ability grouping is inherently neither good nor bad. It is neutral. Its value depends upon the way in which it is used. Where it is used without close examination of the specific learning needs of various pupils and without the recognition that it must follow the demands of carefully planned variations in curriculum, grouping can be, at best, ineffective, at worst, harmful. It can become harmful when it lulls teachers and parents into believing that because there is grouping, the school is providing differentiated education for pupils of varying degrees of ability, when in reality that is not the case. It may become dangerous when it leads teachers to underestimate the learning capacities of pupils at the lower ability levels. It can also be damaging when it is inflexible and does not provide channels for moving children from lower to higher ability groups and back again either from subject to subject or within any one subject as their performance at various times in their school career dictates.

However, ability grouping may be used effectively when it grows out of the needs of the curriculum and when it is varied and flexible. Pupils can be assembled for special work, whether advanced content or remedial instruction in a given subject. Teachers can more easily carry out specific plans appropriate for one ability level without having to provide for other pupils for whom the particular content may be inappropriate. Pupils at all levels can be freed to participate more fully without fear of derision either for being "too dumb" or "too smart."

At least until such time as procedures for more completely individualized instruction become incorporated into school policy and teacher preparation, schools will continue to rely on various kinds of grouping in their attempt to differentiate instruction. It is, therefore, essential to recognize that no matter how precise the selection of pupils becomes or how varied and flexible the student deployment may be, grouping arrangements, by themselves, serve little educational purpose. Real differences in academic growth result from what is taught and learned in the classroom. It is, therefore, on the differentiation and appropriate selection of content and method of teaching that the emphasis must be placed. Grouping procedures can then become effective servants of the curriculum.

Secondary School Level

"Nearly all studies concerned with ability grouping versus random grouping at the secondary level have deficiencies that raise serious questions about the validity of their findings.[40] We will limit this review to a few of the recent studies that appear to provide reasonably valid research evidence. The reader is referred to Table 3 for a brief summary of the major studies concerned with ability grouping at the secondary school level.

Starting in 1956, an experimental four-track curriculum was established in the Washington, D.C. high schools. The following year this program was extended to the eleventh grade and in 1958 to the twelfth grade. When the first class progressing through the entire sequence had graduated, an evaluation of the program was carried out and reported.[41] This four-track program was essentially an ability grouping program designed to reduce the ability range of each classroom and increase efficiency of instruction by differentiating the curriculum. The four tracks included the honors track that was restricted to pupils above 115 IQ, the college preparatory track, the general track, and the basic track. The honors track was subjected to an extensive comparative evaluation in which seniors from the class of 1958 who were not in the track program were compared with seniors from the class of 1959 who were in the honors track during their high school years. The study involved the top 270 graduates of each year, the groups being selected so as to give an even proportion of boys and girls and very similar composition in terms of IQ. Both groups had been administered the Iowa Tests of Educational Development during their senior year. The median score for the honors track students of 1959 was five points higher than the comparison group of 1958 in "correctness of expression", three points higher in "quantitative thinking", and six points higher in "science achievement". The two groups were also compared on the College Entrance Board Examination. The honors program group was 37 points higher on their median scholastic aptitude score, and 30 points higher on their median mathematics score. This study presents rather sound evidence in favor of a highly differentiated curriculum for superior students.

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[40] Borg, Op cit., p. 18.

[41] C. F. Hansen, A Third Year Evaluation Report on the Four Track Curriculum, unpublished manuscript, Board of Education, District of Columbia, April 15, 1959.

Probably the best controlled and most informative study concerned with ability grouping at the secondary level that has been reported to date is the research recently compled by Drews.[42] Although limited in some respects in that pupils were scored at only one grade level, and in one subject area, this research used exceptionally good design in assembled data on a number of important variables that have not been explored in previous research. The goal of Drews' research was to determine the effects of heterogeneous and homogeneous grouping upon pupils at three ability levels in ninth grade English.

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[42] Op. cit.

The criteria for establishing the pupil's ability level were IQ, reading skills, and language skills. Placement of pupils into the two treatments and the three ability levels was carried out using stratified random sampling prior to the start of the school year. Tests and questionnaire data were collected at the beginning and end of the year, and data were also gathered in observations, three being made of each class involved in the study. The final sample for whom all major data were collected included a total of 432 students. Because both the homogeneous and heterogeneous groups were divided into three ability levels, and each ability level was divided by sex for the purposes of analysis, some of the sub-samples were small.

Eight teachers were involved in the experiment, four experienced and four inexperienced. As a rule, each teacher taught two homogeneous classes at different levels and one heterogeneous class, thus helping to cancel out possible differences in teaching ability. Experienced and inexperienced teachers taught equal proportions of the homogeneous and heterogeneous classes. All teachers met with Drews for a 90 minute period every two weeks throughout most of the experimental year in an effort to develop a common viewpoint on the methods and curriculum adjustments to be made in the homogeneous and heterogeneous classes. Teachers attempted to adapt the curriculum in both homogeneous and heterogeneous classes. Some acceleration was carried out in the superior homogeneous classes, but the main goal of the differentiated curriculum at all ability levels was enrichment. One of the outstanding aspects of Drew's study was the great effort aimed at helping teachers develop a well-differentiated curriculum for use in both homogeneous and heterogeneous classrooms.

Initial and final achievement were measured in Drews's study using the reading and language tests from the California Achievement Test Battery. The advanced form was used for superior pupils, the intermediate form for average pupils, and the elementary form for slow pupils. In addition to the reading and language tests given at all ability levels, superior students were also administered tests of critical thinking and dogmatism and average pupils were administered tests of problem solving and dogmatism. The slow group was given an individual reading test in addition to the group tests of reading and language. Initial and final test scores were analyzed using the t-test to compare homogeneous and heterogeneous sub-samples of the same sex and ability levels. In reading comprehension, none of the comparable groups were significantly different on either the initial or final testing. The same comparisons of the pre- and post-tests of language achievement yielded the same results, although some of the differences obtained approached statistical significance at the .05 level. Negative results were also obtained on the critical thinking tests, problem solving tests, and dogmatism scale. Thus, it may be concluded from Drews' study that homogeneous grouping in ninth grade English has no significant effect upon the achievement areas measured at any of the three ability levels.

Ruth B. Ekstrom[43] reviewed the literature from 1920 to 1958 covering experimental studies of homogeneous grouping. "The findings of this survey can be divided into three major groups: (a) thirteen studies which found differences, having or approaching significance, favoring homogeneous grouping, (b) fifteen studies which found no differences in achievement in homogeneous or heterogeneous groups, or which found homogeneous grouping detrimental, and (c) five studies which gave mixed results, partially favorable and partially unfavorable to homogeneous grouping. The studies covered grade levels from elementary school through college and dealt with a wide range of subject matter, some treating a single topic and some achievement in several topics.

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[43] Op. cit.

No consistent pattern for the effectiveness of homogeneous grouping was found to be related to age, ability level, course content, or method of instruction. Experiments which specifically provided for differentiation of teaching methods and materials for homogeneous groups, and which made an effort to "push" bright homogeneous classes, tended to favor the homogeneous groups."

Non-Grading

There is more information available currently on the extent to which non-grading is practiced as a form of school organization than on research evidence which would facilitate an evaluation of such programs.

In 1959 the NEA Research Division[44] sent questionnaires to 1495 urban school districts. Out of 319 school districts answering, 71 reported using the primary block or ungraded sequence, about 6.3 percent.

In 1960, Dean[45] estimated that 18 percent of schools reported some kind of non-graded primary unit.

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[44] NEA Research Division, National Education Association of the U.S., 1201 Sixteenth Street, Northwest, Washington 6, D.C.

[45] Stuart E. Dean, Elementary School Administration and Organization, U.S. Department of Health, Education, and Welfare, Office of Education, Bulletin 1960, No. 11, Washington, D.C.: Superintendent of Documents, Government Printing Office. 126 pps.

A study reported by Rehwoldt and Hamilton[46] may be of special interest to Los Angeles County educators because it samples the local population. They formed seven multi-grade classes constituting the experimental group, and eight classes containing one grade each as the control group. The classes were from grades one through six. They found considerable evidence in support of a multi-grade grouping pattern that would place children of different grade levels in the same classroom. They report positive evidence for academic achievement, personal and social adjustment of pupils.

Williams[47] is critical of the literature on the non-graded school for its base in opinion rather than research. She did a small, but carefully designed study on two matched elementary school groups of 38 children each. Pupil achievement was measured by the Stanford Achievement Test, Primary Battery, Form X.

"There was a significant difference between the high-scoring pupils in the two schools and between the low-scoring pupils in the two schools ($t=2.26$, $p < .05$). The findings suggests that the non-graded organization favors the brighter pupils, and the graded organization the lower-achieving pupils.

The data were further analyzed to study the achievement of boys and of girls in the graded system and in the non-graded system. A subsample of original matching. The t test was used to compare boys and girls separately in the two types of organizations.

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[46] Walter Rehwoldt and Warren W. Hamilton, "An Analysis of Some of the Effects of Interage and Intergrade Grouping in an Elementary School", Doctoral Dissertation, University of Southern California, 1956.

[47] Wilmajean Williams, "Academic Achievement in a Graded School and in a Non-Graded School", The Elementary School Journal, December, 1966, pps 135-139.

No significant difference was found in achievement for the boys on any single test except Word Study Skills ($t=2.30$, $p < .05$). This difference favored the boys in the graded school. In total achievement the significant difference again favored the boys in the graded school. For the boys in the two types of school organizations, no significant differences were found in achievement on any single test or on total achievement ($t=2.12$, $p < .05$).

The results of this study would seem to indicate that there is little relationship between graded and non-graded school organization and pupil achievement. Nor do the results show that the slower pupils profit more from the non-graded structure. Since the slower pupils of the graded school achieved significantly higher than the slower pupils of the non-graded school, this study refutes the claim made by some that the graded structure is responsible for reading failures and mental health problems.

The better performance of the low achievers in the graded school can be attributed, in part, to the pupil-teacher ratio. In the graded school, the ratio was on the average twenty-seven pupils per teacher; in the non-graded school, forty-five per teacher. In pupil achievement, the pupil-teacher ratio may be more important than graded or non-graded organization.

This study also confirms the statement that the graded schools are aware of the differences in children's abilities and allow for these differences in planning and instruction. How much more time and energy are expended in the graded school than in the non-graded school to provide for a wide range of abilities? The question is worthy of further research.

When the entire study is considered, however, there does not appear to be a significant relationship between school organization and pupil achievement. In both schools the pupils were achieving above the norms provided by the test."

Borg's[48] recent comprehensive research warrants some reporting in detail:

The General Goal of this research has been to study differences in the effects upon elementary, junior high school, and high school pupils of an ability grouping system that differentiated the curriculum principally by adjusting the rate of presentation of curricular materials, and a random grouping system that differentiated the curriculum principally through the use of enrichment. Two adjacent and closely comparable school districts in Utah provided the setting in which these differences were explored. One of these districts employed random grouping with enrichment, and the other had adopted a system of ability grouping with acceleration, coincident with the start of this research.

Over 2,500 pupils from the fourth, sixth, seventh, eighth, and ninth grade levels were selected in the two districts at the beginning of the study. During the second year of the study, this sample was increased to about 4,000 pupils. Research data were collected over a four-year period in order to appraise the long term effects of the two grouping treatments. Pupils who were first tested early in grade four were followed through grade seven. As all samples were similarly followed over the period of the study, data were collected at all grade levels from four through twelve. The district that employed ability grouping is referred to throughout this report as District A. The other district participating in this research, known as District R, employed random or heterogeneous grouping.

Three major types of differences were considered in analyzing most of the data. The first and most important comparisons were between comparable pupils in the two grouping treatments. These comparisons involved pupils of the same sex and ability level in the ability grouped and random grouped samples and are referred to as between-treatment differences. These differences provide the best evidence on the differential effects of ability grouping and random grouping upon the dependent variables. Comparisons between pupils of the same sex and in the same grouping treatment who differed in ability level are referred to as level or within-treatment differences. These comparisons tell us whether the grouping treatments had a differential effect upon pupils at different ability levels. The final classification used in the analysis was sex. Boys and girls who were in the same grouping treatment and at the same ability level were compared to provide knowledge about the sex-related differences on the dependent variables.

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[48] Op. cit., pp 85-90.

ACHIEVEMENT

Achievement data were collected for all samples and gains from year to year as well as gains over the entire four years were analyzed. This procedure provided a large body of data on the nature of long term achievement in the two grouping treatments. Also, because achievement data for two or more samples were available at most grade levels, extensive cross checking of the results was possible. During the first year of the study, the California Achievement Test was used, while in subsequent years, measures of mathematics, science, social studies and reading from the STEP battery were administered.

Elementary

Achievement in four subject areas as well as overall achievement were compared during the elementary school years for these samples. A total of 54 statistical comparisons based on analysis of variance and covariance were made between ability grouped and random grouped pupils. Of these 54 comparisons, 23 revealed statistically significant differences. Nineteen of these differences were favorable to District A pupils while nine favored District R pupils. Of the 19 differences favoring ability grouped pupils, 15 occurred during the first year of the study. If these first year differences had been due to a substantial superiority of ability grouping over random grouping, we would have expected the differences to grow larger each year as the cumulative effects of the better system widened the achievement gap. No such cumulative effects offurred and in fact, many of the achievement differences favoring District A disappeared by the time Sample IV pupils had completed the sixth grade. Thus, we may conclude that neither ability grouping with acceleration nor random grouping with enrichment is more effective for all ability levels of elementary-school pupils. When data for the different ability levels were considered separately, achievement advantages of the two grouping systems, though small, tended to favor ability grouping for superior pupils and random grouping for slow pupils. As was hypothesized, the achievement results for average pupils did not consistently favor either grouping treatment.

Junior High School

All five of the samples employed in this study were in junior high school at some time during the four years of the project. When we combine the achievement analyses for these five samples, we find that a total of 60 statistical comparisons were made between comparable groups in the two grouping treatments; 33 in mathematics and 27 in science. Of the differences in mathematics achievement, five were significant in favor of District A subgroups, five in favor of District R, and the remaining 23 were nonsignificant. Of the science comparisons, five differences were significant favoring District A, one favoring District R and the remaining 21 were nonsignificant.

A study of the results at each of the three ability levels indicates that there was some tendency for ability grouping to lead to greater mathematics achievement among superior pupils and greater science achievement among average pupils. Among slow pupils, the differences between the two grouping treatments were small, but tend to favor District R in both mathematics and science.

OVERACHIEVERS AND UNDERACHIEVERS

In this phase of the Utah study, samples of fourth and sixth grade pupils from random grouped and ability grouped classrooms were classified as overachievers, underachievers and normal achievers based on the relationship between their achievement, chronological age, and mental age. The proportions of overachievers, normal achievers and underachievers among pupils of different ability levels in the two grouping systems were then compared.

There was a significant tendency for girls more frequently to be overachievers and less frequently to be underachievers than boys. This trend was present at both grade levels in both treatments.

Overall comparisons between District A and R indicated that there was a consistent trend for ability grouped pupils to be more often classified as overachievers and less often as underachievers. In comparing pupils at each of the three ability levels, we find that differences between superior pupils in the two districts were statistically significant at both fourth and sixth grades, with District A having more overachievers and a smaller percentage of underachievers than District R. No significant differences were found between the proportions of overachievers, underachievers, and normal achievers among pupils of average or low ability in the two districts.

STUDY METHODS AND ATTITUDES

Considerable evidence concerning study habits was collected over the four years of the Utah study. Pupils in Samples IV, VI, VII, and IX were administered study habits measured at grade levels ranging from seven to 12. Two measures were used, the California Study Methods Survey (CSMS) which yields three subtest scores, and the Survey of Study Habits and Attitudes (SSHA) which yield a total score only.

The Sample IV results on the CSMS showed all of the total score differences and seven of the nine subtest differences between comparable groups in Districts A and R to be statistically significant. Differences favored District R and were generally largest between pupils of superior ability. These results lead to the conclusions that pupils in a random grouping situation consistently develop better study methods during the elementary school years than pupils in an ability grouping situation.

Sample VI average pupils in District R received consistently higher scores on the CSMS than comparable District A pupils. No significant between-treatment differences were present for slow or superior pupils. Sample VIII average pupils in District R received higher SSHA scores. No significant between-treatment differences emerged from the Sample IX data. It may be concluded that if any advantage accrues from heterogeneous grouping at the secondary level, it is for average pupils, who made significantly greater gains in study habits in Samples VI and VIII.

SOCIOMETRIC CHOICE

A near-sociometric measure of the usual partial-rank-order type was developed for use in this study. Three criteria were employed, each with five positive choices. Each subject was asked to indicate by placing a check mark beside names on a roster of his classmates, those whom he preferred under each criterion. The three criteria were: 1) the five children in the class who are your best friends; 2) the five children with whom you prefer to study; and 3) the five children whom you would most like to have with you if you were transferred to another classroom. Each pupil's sociometric status was obtained by summing the choices he received on the three criteria. After obtaining a sociometric choice score for each pupil, the pupils were classified as stars, regulars, neglectees, or isolates.

The sociometric data collected seem to provide considerable evidence relating to sociometric choice in ability grouped and random grouped classes during the intermediate grades. Analysis revealed that the overall proportions of stars, regulars, and neglectees in District A and District R were similar, thus leading to the conclusion that ability grouping did not result in a permanent leadership vacuum in groups of average and slow pupils.

Superior students were found to lose some sociometric status when placed in ability grouped classrooms. This loss was particularly evident in the star classification but was not accompanied by any increase in the neglectee-isolate classification. Data on mobility of sociometric status suggest that superior pupils regain some of this status loss after they have made an adjustment to the ability grouped situation. Average and slow pupils appear to have a far better chance of gaining social recognition in ability grouped classrooms than do comparable pupils in random grouped classrooms. For the slow pupil, ability grouping not only appears to increase the pupil's chances of being classified as a star, but also reduces his chances of being classified as a neglectee-isolate.

PUPIL ATTITUDES

Pupils in Sample IV were administered the USU School Inventory during their sixth grade year. This measure contains three scales: Attitude Toward Peers, Attitude Toward the Teacher, and Attitude Toward School.

Results on the Attitude Toward Peers scale revealed no significant between-treatment differences. Comparison on the Attitude Toward the Teacher scale showed that superior girls and boys and slow boys in District A received significantly more favorable scores than comparable District A pupils. No significant differences were found between average pupils in the two districts. Thus, ability grouping appears to be associated with more favorable attitudes toward the teacher among both superior and slow pupils.

PUPIL PROBLEMS

The instruments employed to study pupil problems were the SRA Youth Inventory and the SRA Junior Inventory.

These data support the overall conclusion that ability grouped junior high school pupils in average or superior groups report fewer problems than do comparable pupils in random grouped classes.

SELF-CONCEPT

The principal measure of self-concept employed in this research was the Index of Adjustment and Values, developed by Robert E. Bills.[49] The extent and consistency of differences in the Concept of Self data seem to justify the conclusion that at all ability levels, pupils in random grouped classrooms have more favorable concepts of self than comparable pupils in ability grouped classrooms. With respect to concept of self, the two grouping treatments had a somewhat greater effect upon girls than boys.

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[49] Robert E. Bills, E. L. Vance, and O.S. McLean, "An Index of Adjustment and Values," Journal of Consulting Psychology, XV, 1951, pp. 257-61.

A SUMMARY: CONCLUSIONS

TABLE 20

SUMMARY OF COMPARISONS BETWEEN THE TWO GROUPING TREATMENTS

		Elementary			Junior High			
Variable	Sample	Sup.	Aver.	Slow	Sup.	Aver.	Slow	Remarks
Achievement	All	A*	N	R	A	A	R	Achievement differences over the four years were not large.
Overachievers and Underachievers	IV, VI	A	N	N				Based on first year's data only.
Study Methods and Attitudes	IV, VI VIII, IX	R	R	R	N	A	N	Elementary level differences largest for superior pupils.
Sociometric Choice	IV, VI	R	A	A				In ability grouped classrooms, gains of average and slow pupils are large.
Pupil Attitudes	IV							
Toward Peers		N	N	N				Slow boys had notably better attitudes in ability grouped classes.
Toward Teacher		A	N	A				
Toward School		N	N	A				
Pupil Problems	IV, VI VII, VIII	N	R	N	A	A	A	At junior high level, ability grouping was consistently related to fewer problems in all replications.
Self Concept Scores	All							
Concept of Self		R	R	R	R	R	R	Ability grouping was generally associated with less favorable self-concept scores at all levels and for all samples.
Acceptance of Self		R	R	R	R	R	R	
Ideal Self		N	R	N	N	N	N	
Discrepancy		R	R	R	R	R	R	
Personality								
1. Feeling of Belonging	IV	R	R	R				Personality measures at elementary level of doubtful validity.
2. Anti-Social Tendencies	IV	R	R	R				
3. Ascendancy	VI, VII VIII				N	N	N	The few significant differences on 3, 4, and 5 generally favored District R, but were not consistent between replications.
4. Inferiority	VI, VII VIII				N	N	N	
5. Competent Assertiveness	IV	N	N	R				
6. Anxiety to Achieve	VI				N	R	N	
7. CPI Class 1	VI, VII				A	R	N	Differences between average were more consistent than those between superior pupils.
8. CPI Class 3	VI, VII				A	N	R	
9. Flexibility	VI, VII				N	N	N	
10. Projective test								
Aggression	IV	N	N	N				
Depression	IV	N	N	N				
Inferiority	IV	N	N	N				

* A indicates results favoring ability grouping.
R indicates results favoring random grouping.
N indicates results favoring neither consistently.

Based on these data, it must be concluded that random grouping is consistently related to higher self acceptance for pupils at all ability levels and over most of the grade levels covered in this project.

PERSONALITY

Variables from four personality inventories were employed: The California Test of Personality (CTP); Inventory of Factors GAMIN (GAMIN) Objective-Analytic Personality Tests (OA); and the California Psychological Inventory (CPI). A projective measure employing cards from the Thematic Apperception Test (TAT) and the Michigan Picture Test (MPT) was also used to measure three variables that seemed particularly important. These data suggest that ability grouping does not lead to a greater feeling of belonging on the part of pupils at any ability level, but instead provides a less favorable climate than random grouping. Our findings support the conclusion that ability grouping is no more likely to develop inferiority feelings in pupils at any ability level than is random grouping.

OVERALL APPRAISAL OF THE GROUPING TREATMENTS

Let us now attempt to weigh the overall effects of the two grouping treatments on superior, average, and slow pupils at the elementary and junior high level. Table 20 provides a brief summary of these effects. Because of the limitations of the high school data collected in the Utah study, such an overall appraisal does not appear appropriate at that level.

Elementary

Superior Pupils: The superior pupil generally showed greater achievement gains in ability grouped classes. The differences in the Utah study were not large except for the first year, but data for the four years reflected a significant overall advantage for the ability grouping system. The data on over-achievers supported this finding, but as this phase of the research was carried out for only one year, the results must be considered tentative.

The study methods data for superior pupils showed a consistent and fairly large advantage for the random grouping treatment. Thus, although the ability grouped bright pupil may achieve more, he may develop less adequate study methods and be less capable in an independent study situation than his counterpart in the heterogeneous classroom.

When we consider the non-cognitive data for superior elementary school pupils, perhaps the most noteworthy finding is the loss in sociometric status and self-concept found for these pupils in the ability grouped situation. In weighing the total treatment effects for superior pupils during the intermediate grades in the elementary school, the investigator concludes that the ability grouping treatment is slightly more desirable.

Average Pupils: In reviewing the results of the Utah study for average pupils during the fourth, fifth, and sixth grades of the elementary school, we find a complex pattern of advantages and disadvantages associated with the two grouping treatments. In terms of achievement, it seems there is nothing to choose between the two treatments for average pupils. The average pupils, however, were found to have better study methods in the random grouped treatment.

With regard to non-cognitive variables, we find that average pupils showed more favorable personality characteristics, higher self-concept scores, and fewer pupil problems in the random grouped situation. The only aspect of their experience that strongly favored the ability grouping situation was the improved sociometric status they gained in this treatment. Although this improvement in status is not to be taken lightly, it seems that the preponderance of other variables favoring the random grouped situation must lead to the conclusion that the needs of most average pupils were better met in the heterogeneous classroom.

Slow Pupils: In terms of achievement related variables, the slow pupil generally showed better performance in the heterogeneous classroom. His achievement gains were rather consistently higher in the random grouped situation as were his study habits scores.

Review of the non-cognitive variables for slow pupils does not present a clear cut advantage for either grouping treatment. The most striking result of ability grouping for slow pupils was the tremendous gains they made in sociometric status. The slow pupil's attitudes toward both the school and teacher were also somewhat more favorable in the ability grouping situation. On the other hand, the self-concept data as well as the rather limited personality data available at this level tended to favor the random grouping. The reader may recall, however, that the differences between the two treatments in self-concept scores were much smaller for slow pupils than for the superior or average pupils. Thus, it is the conclusion of the investigator that the large gains in sociometric choice are the most significant single effect of the grouping treatments on slow pupils. Therefore, it is concluded that the ability grouping system provides a more favorable environment for the slow pupil than does the random grouping treatment.

Junior High School

In reviewing Table 20, the reader will note that data on overachievers and underachievers, sociometric choice, and pupil attitudes were not collected at the junior high school level. Somewhat more personality data, however, were collected at this level, and these data can be accepted with somewhat more confidence than the personality data obtained during the elementary school years.

Superior Pupils: Ability grouping led to significantly greater achievement gains for superior pupils at the junior high school level, although these differences were not large. In reviewing the non-cognitive data, superior pupils in the ability grouped classes reported fewer pupil problems and obtained more favorable scores on the CPI measures of poise, ascendency and self-assurance (Class I), as well as on measures of achievement potential and intellectual efficiency (Class III). These differences on the CPI, however, were found in fewer than one-half of the replications, and may be regarded as tentative. When all data are considered, it appears to the investigator that ability grouping is slightly more advantageous for superior pupils at the junior high school level.

Average Pupils: The pattern is somewhat the same for average groups, with ability grouped pupils making greater achievement and more favorable study methods scores. On the non-cognitive variables, average pupils in ability grouped classrooms reported fewer problems, but obtained somewhat less favorable self-concept scores than similar groups in the random grouped classrooms. Random grouped average pupils also obtained generally more favorable scores on the CPI Class I variables as well as on the Anxiety to Achieve measures on the Cattell OA battery. Again there seems little to choose between the two grouping treatments although the differences in the cognitive variables seem to give ability grouping a slight advantage.

Slow Pupils: Slow pupils in random grouped classrooms at the junior high school level generally achieved more than their ability grouped counterparts. Random grouped slow pupils also received somewhat more favorable self-concept scores although they reported a greater number of problems than the ability grouped samples. The personality data for slow pupils was characterized by a complete lack of consistent differences favoring either treatment. The lack of significant differences on aggression, depression, and inferiority feelings found in the projective phase of the personaility study leads us to question some of the dire consequences that have been predicted by critics of ability grouping. Although personality data at this age level are at best tentative, the inferiority feelings and other negative personality characteristics thought to be caused by ability grouping of slow pupils did not emerge in the Utah study. In considering the overall pattern of differences, however, the investigator concludes that the heterogeneous classroom provides a slightly better environment for slow pupils at the junior high school level.

Grouping the Retarded

In the area of the educable mentally retarded, research has emerged which evaluates the overall effectiveness of grouping the retarded, and also of grouping within this ability level.

Kirk's[50] review of the literature is summarized in the following comments: "The practice of organizing special classes for the educable mentally retarded increased tenfold between 1922 and 1958. In spite of this rapid increase in special provisions, as contrasted to leaving the children in the regular grades, there is only sporadic research evidence which justifies this increase. Although over a dozen research studies have been conducted in this area, definitive conclusions cannot be made. The general impressions derived from these studies are that 1) the children assigned to special classes are equal to or inferior in academic achievement to those remaining in the regular grades, 2) the children at the lower range of educability show equal or superior academic achievement to similar children left in the regular grades, 3) in social adjustment the special-class groups appear superior to those left in the regular grades, and 4) the retarded children in the regular grades tend to be isolated and rejected by their normal peers. Any generalizations made from the studies are questionable, since the studies suffered from the _in situ_ nature of the investigations, lack of control of the selection factor, the short period of time the children were enrolled in special classes after failure in the regular grades, little definition of the programs of the special classes, and the questionable reliability and validity of the instruments used to measure achievement and adjustment. What is needed is a comprehensive longitudinal study of the effects of special classes beginning when children are six years of age. The development of a special-class group should be compared with that of a randomized group of retarded children remaining in the regular grades. Such an experiment is now under way.

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[50] Samuel A. Kirk, "Research in Education", in H.A. Stevens and R. Heber (eds.), Mental Retardation, Syracuse, New York: University of Syracuse Press, 1964, pp. 92-94.

The interest in community classes for the trainable retarded child (IQ's below 50) during the postwar period has generated a series of short-term studies on the effects of training in self-care, social adjustment, and economic usefulness on the development of such children. Of the seven studies reported, only one extended for a number of years, and only two used a contrast group. In general, the results did not show significant benefits from the special-class programs, which were hurriedly assembled with staff which had had little previous training or experience with this type of child. The instruments of measurement were generally improvised by the investigators. It is the reviewer's opinion that research in this area was initiated without adequate preparation in terms of structure, theory, adequate hypotheses, or adequate measuring instruments. It is possible that intensive case studies, even with a sample of one in some cases, would have served a better purpose at this stage of development than the attempt to use complex statistical procedures on uncontrolled variables.

The studies on the effects of educational procedures on the development of intelligence with retarded children (a topic which has remained dormant for many years) have recently attracted some attention. The prejudice against the theory that intelligence is educable (resulting from certain views on heredity, the constancy of the IQ, and the static nature of mental retardation) tended to shelve the topic as an area worthy of investigation. Sporadic research studies present positive evidence that educational treatment tends to displace the rate of growth, especially when cultural and educational programs are provided at a young age. The present problem for research on the educability of intelligence is to identify more specifically the factors in the _nature_ of the child and the variables in the _nurture_ provided by the environment which effect change in rate of growth, both positively and negatively.

Studies on reading with the mentally retarded have attracted more authors than all other areas combined. Of particular interest are the studies which show that the mentally retarded are generally reading below their mental-age-reading-grade expectancy. Where they are up to or above their expectancy, a special emphasis on reading instruction has been made. No special methods were found superior to others in teaching reading to retarded children. One surprising result of several studies points out that children with brain damage and with perceptual disturbances are not necessarily defective in reading if special methods and emphasis have been given to this process. If the studies reported are confirmed by future research, it would appear that brain-injured children achieve similarly to non-brain-injured children under conventional methods of instruction but that brain-injured children under more systematic methods of instruction can progress faster than non-brain-injured children under conventional special-class or regular-class instruction. These results, together with others, point to the importance of research on systematic methods of instruction with retarded children.

The area of quantitative thinking abilities and arithmetic achievement has not been the subject of many experiments. In general, the mentally retarded achieve at a higher level in arithmetic computation than in arithmetic reasoning. Also, some differences in the process of computation have been found between normals and subnormals. Both of these findings, however, probably reflect the methods used in instruction rather than a specific characteristic of subnormal intelligence. The needed research in the area of arithmetic is the study of instructional procedures by which quantitative thinking ability can be developed in the mentally retarded child.

Most of the studies on speech and language of the mentally retarded are of a survey type. These tend to relate speech defects to CA, MA, and IQ. There were few studies which attempted to evaluate the effects of speech correction or language instruction. Of the few studies reported, only one study (on the training of language of mongoloid children) used a randomized control group. Much of the literature on language instruction deals with a description of the procedures used and a report that improvement was observed by the teachers or others on a subjective basis. Since deficits in language facility in all of its phases are traditionally correlated with subnormal intelligence, this area is deserving of more research than is presently evident. It is likely that our psychological theories of language and thought processes have not progressed sufficiently for us to conduct applied research in educational programs with the mentally retarded.

Art and music activities are usually standard practices in educational programs for the mentally retarded. From the few studies reported, there is an indication that competency in art and music is related to mental development. The mentally retarded are slower to learn and remain longer at each stage. The effects of art and music therapy on personality or intelligence are still in the realm of conjecture.

Surveys of motor proficiency show quite clearly that retarded children are inferior to normal children in this so-called non-intellectual ability. The effects of training in physical education or motor proficiency have not yet been determined. In view of Seguin's earlier efforts with the physiological method of training defectives and the sporadic attempts to use physical activity as an educational media, research in this area may be worthwhile. This is an area of research that has been seriously neglected. With the recent interest in the concepts of Piaget and the methods of Montissori, a fresh approach to this question should be in the making."

Dunn[51] has reported on a series of comparisons of mentally retarded pupils in regular and special classes.

"In these it has been found that retarded children in special classes compared unfavorably with the retarded in regular grades in school achievement (Bennett, 1932; Blatt, 1958; Cassidy and Stanton, 1959; Elenbogen, 1958; Mullen and Itken, 1961; Pertsch, 1938; Thurstone, 1958). The early investigations had the methodological weakness of selecting both special and regular class retardates from the same school system where most of those out of rapport with the school were placed in special classes. However, in the more recent studies, even with this factor partially controlled, the general findings remained the same. Retarded children who stayed in the regular grades did as well academically, or better, as those in the special class and neither worked up to mental age expectancy. A brighter side to these studies was the indication that retarded pupils in the protective environment of special classes had better social and personal adjustment scores than those of comparable intellect who were competing in the regular grades (Blatt, 1958; Cassidy and Stanton, 1959; Elenbogen, 1957; Thurstone, 1959). The sociometric studies, with the exception of that done by Jordan tend to support this finding.

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[51] Op. cit., pp. 33-34.

We are accumulating evidence that special class programs where pupils are not placed in them until they have failed in the regular grades for two or three years have not paid off. Research is accumulating to support the following six major changes in practices. (1) Educable retardates should be placed in special classes not later than their first day in school. (2) Retarded children from conditions of extreme cultural deprivation should be provided an enriching pre-school program. (3) Work-study programs should be extended for the adolescent retardate. (4) Increased individual instruction and self-teaching should be provided. (5) The IQ limits for special class placement of the educable pupils probably should be shifted upward from 50 to 75, to 60 to 80. (6) A balanced curriculum should be provided which stresses personal-social development, the acquisition of good work habits, and the learning of needed skills in the 3 R's for independent living."

Comparative Adult Adjustment of Retardates from Special and Regular Classes

Darrah's[52] recent review of the literature indicates a lack of research comparing adult adjustment of retardates from special and regular classes. There are, however, a number of studies of adult adjustment in which retarded pupils from special classes were compared to normal pupils from the same school population. The three classical studies - Fairbank[53] (1933), Kennedy et al.[54] (1948), and Charles's[55] (1953) followup study of Baller's[56] research in 1936 - all concluded that the majority of higher grade mentally retarded persons make acceptable adjustments to the community. The did find, however, that their overall adjustment is inferior to that of normals when measured in such terms as number of legal violations, welfare receipts, and general living conditions. As could be expected, retardates are particularly inferior in occupational level and educational achievement.

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[52] Joan Darrah, "Diagnostic Practices and Special Classes for the Educable Mentally Retarded", Exceptional Children, Vol. 33, No. 8, April, 1967, pp. 524-526.

[53] Ruth F. Fairbank, "The Subnormal Child-Seventeen Years Later, Mental Hygiene, 1933, pp. 177-208.

[54] Ruby J. R. Kennedy, et al., The Social Adjustment of Morons in a Connecticut City, Willport, Connecticut: Commission to Survey Resources in Connecticut, 1948. Reviewed in S. A. Kirk and Bluma B. Weiner (Eds.), Behavioral Research on Exceptional Children, Washington, D.C.: The Council for Exceptional Children, 1963, pp. 87-88.

[55] D. C. Charles, "Ability and Accomplishment of Persons Earlier Judged Mentally Deficient", Genetic Psychology Monographs, 1953, pp. 3-71. Reviewed in S. A. Kirk and Bluma B. Weiner (Eds.), Behavioral Research on Exceptional Children, Washington, D.C.: The Council for Exceptional Children, 1963, p. 85.

[56] W.R. Baller, "A Study of the Present Social Status of a Group of Adults, Who, When They Were in Elementary Schools, Were Classified as Mentally Retarded", Genetic Psychology Monographs, 1936, pp. 165-244.

The negative aspects of these results are emphasized in recent studies by Lee, Hegge, and Voelker[57] (1959) and Peterson and Smith[58] (1960). Both found that the retarded groups were more unstable vocationally and had experienced longer periods of unemployment and more frequent job changes. Lee et al. found that, over a three-year period, 33 percent of two retarded groups had been discharged or had resigned because of poor behavior, and that the proportion of legal violations recorded by the police ranged from 31 to 71 percent.

Goldstein[59] questioned the validity of comparing retardates and normals who have attended the same school but have attained very different socioeconomic levels. He believes that the poor adjustment of the retardates could be a function more of their milieu than of their low intellectual ability. He advocated research comparing retardates and normals at the same socioeconomic level. Although such research might minimize the effects of retardation on adult adjustment, it would say nothing about the ultimate educational soundness of special classes.

Comparative Academic Training

On the basis of research, it can be said that the retardate has a greater probability of receiving more academic training if he remains in a regular class. Kirk[60] (1964) reported nine studies comparing the academic achievement of special and regular class retardates. In four of these, the retardates in regular classes showed greater achievement than the special class youngsters; in another four there were no significant differences between the two groups. Only one study, Cowen's[61] (1938) reevaluation of Pertsch's[62] (1936) study, reported greater achievement in the special group.

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[57] J. L. Lee, T. G. Hegge, and P. H. Voelker, "A Study of Social Adequacy and of Social Failure of Mentally Retarded Youth in Wayne County, Michigan", Wayne State University, 1959.

[58] L. Peterson and L. L. Smith, "A Comparison of the Postschool Adjustment of Educable Mentally Retarded Adults with that of Adults of Normal Intelligence", Exceptional Children, 1960, No. 26, pp. 404-408.

[59] H. Goldstein, "Social and Occupational Adjustment", in H.A. Stevens and R. Heber (Eds.), Mental Retardation, Syracuse, New York, 1964, pp. 214-258.

[60] Op. cit., pp. 57-99.

Kirk questioned the validity of these studies, however, because of "the major methodological problems involved in 'in situ' research". He contended that results from studies of preexisting special and regular classes are inconclusive when the selection factor of subjects is not controlled. For more conclusive evidence he looked to further research where the selection factors would be controlled. One such study was Johnson's[63] (1961) which in essence found what previous researchers have found - that retardates in special classes showed lower achievement in arithmetic and reading than did their regular class counterparts, even when selection factors were controlled.

Comparative Social Adjustment

If special classes have little or no academic value over regular classes, surely they must have value in terms of personal and social adjustment, one of the criteria determining whether an individual should be placed in a special class. Given that retardates are not well accepted in regular classes ---

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[61] P. A. Cowen, "Special Class Versus Grade Groups for Subnormal Pupils", School and Society, 1938, No. 48, pp. 27-28.

[62] C. F. Pertsch, A Comparative Study of the Progress of Subnormal Pupils in the Grades and in Special Classes, Teachers College, Columbia University, New York, Bureau of Publication, 1936. Cited by S. A. Kirk, Research in Education, in H.A. Stevens and R. Heber (Eds.), Mental Retardation, Syracuse, New York: University of Syracuse Press, 1964, p. 58.

[63] G. O. Johnson, A Comparative Study of the Personal and Social Adjustment of Mentally Handicapped Children Placed in Special Classes with Mentally Handicapped Children Who Remain in Regular Classes, Syracuse, New York: Syracuse University Research Institute, 1961.

Johnson[64] (1950) and Thurstone[65] (1959) have shown that they have a much higher probability of rejection and isolation in regular classes -- it should follow that their social adjustment will be better in a group at their own ability level.

Research results are contradictory on this point. The two major stumbling blocks are lack of (a) a universally accepted definition of social adjustment and (b) standardized instruments to measure adjustment.

In comparing social adjustment of special and regular class retardates, the only thing one can say with certainty is that there are more rejectees and isolates among the retarded in regular classes and more stars in special classes. From these results, no conclusions can be drawn about the relative merit of special classes over regular classes in regard to adjustment since (a) the existence of more stars in the special class says nothing about social adjustment to normals, and (b) the term social adjustment often has a wider definition (going beyond peer acceptance), for which there is no definitive agreement or adequate measuring device.

Conclusion

Though the procedures used in diagnosing retardation appear to be educationally sound, the next logical step, placement in special classes, cannot be justified on the grounds of greater learning, improved social adjustment, or more constructive participation in the society".

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[64] G. O. Johnson, "A Study of the Social Position of Mentally Handicapped Children in the Regular Grades", American Journal of Mental Deficiency,1950, No. 55, pp. 60-89.

[65] Thelma G. Thurstone, An Evaluation of Educating Mentally Handicapped Children in Special Classes and in Regular Grades, Chapel Hill: University of North Carolina, 1959. Reviewed in S. A. Kirk and Bluma B. Weiner (Eds.), Behavioral Research on Exceptional Children, Washington, D.C., 1963, p. 59.

Wrightstone[66] compared the educational outcomes of mentally retarded children enrolled in a one-track program with outcomes of mentally retarded children in a two-track program.

Specifically, homogeneously grouped and heterogeneously grouped children with retarded mental development were compared in the areas of academic achievement, motor coordination, speech, personal and social adjustment, health habits, attitudes, activities and interests, and peer acceptance.

Data were collected by the administration of tests to pupils, ratings by teachers, field supervisors, and principals, mailed questionnaires to former pupils, parents, and employers, and direct interviews.

Conclusions and Discussion

A survey of the various comparisons undertaken in the area of academic achievement reveals that no clear trend appeared to support either homogeneous or heterogeneous grouping.

In certain intangible areas the experimental low educable pupils tended to function better than their control counterparts. For example, in selected aspects of school adjustment and peer acceptance as observed and rated by the teachers, the low educable experimental pupils seem to have benefited more from the reorganized plan. One explanation for this finding is that the low educable pupils may have felt themselves less segregated in the homogeneous plan where more opportunities existed for increased social interaction among peers.

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[66] J. Wayne Wrightstone, George Forlano, J. Richard Lepkowski, Marvin Sontag, and J. David Edelstein, A Comparison of Educational Outcomes Under Single-Track and Two-Track Plans for Educable Mentally Retarded Children. Cooperative Research Project Number 6908, Project Number 144, of the United States Office of Education, conducted by the Board of Education of the City of New York through the University of the State of New York, 1959.

A similar finding was reported by Johnson[67] who studied the acceptance of retarded children in normal classes, and found them to be among the least accepted in these regular classes. Further studies are needed on the effect of homogeneous grouping on social and emotional development of pupils based on more direct measures and extended observations.

In speech and health habits as observed and rated by the teachers, the experimental low educables registered significant growth over their controls. No significant differences appeared between the experimental and control pupils in growth in motor coordination.

In answer to the basic question, namely, which of the two plans is most effective in the desired outcomes, it is evident that the available evidence cannot weigh the balance wholly in favor of either homogeneous or heterogeneous grouping at the present time. Despite the fact that direct measures of pupil growth in various areas do not yield a clear trend, participating teachers and supervisors generally favor the reorganized plan.

In view of the apparent discrepancy between the results of direct pupil measures and the judgments of participating educators, it is recommended that further research be resumed at a later date in order to give the reorganized plan more time to be effectively implemented and stabilized. Better methods of pupil classification are needed. Teachers of experimental high educable classes as well as the teachers of low educable classes should have a specially designed curriculum to guide them in the differentiation of content and method according to ability level. Both groups of experimental teachers and children were still experiencing a relatively novel situation at the close of the study in comparison to control teachers and pupils. Once reorganization has been in effect for several years and some of its inherent problems have been compensated for, it can be more adequately compared with the non-reorganized plan which has been in existence for many years. In addition, other aspects of the basic question, such as comparative per capita costs, should be included in the evaluation.

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[67] O. G. Johnson, Op. cit., 1950, pp. 60-89.

Grouping the Gifted

Gallagher[68] has spelled out the difficulties involved in evaluating special programs for the gifted.

1. It is not possible to demonstrate the effectiveness of a given program by showing that the gifted children in the special group will score two, three, or four grade levels above their own chronological age on achievement tests.

Reason: Gifted children in the regular program are already performing extremely well from an achievement test standpoint. This has been shown by Terman[69] (1925), Witty[70] (1930), Gallagher and Crowder[71] (1957), and many others. Test results that favor the special group do not answer the question of what these youngsters might have done if they had been in the regular program. There is every reason to believe that they would be well above their own chronological age level in achievement whatever the program.

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[68] James J. Gallagher, Analysis of Research on the Education of Gifted Children, State of Illinois, Office of the Superintendent of Public Instruction, 1960, pp. 60-61.

[69] L. M. Terman, "Mental and Physical Traits of a Thousand Gifted Children", Genetic Studies of Genius, Vol. 1, Palo Alto, Calif.: Stanford University Press, 1925.

[70] P. A. Witty, A Study of One Hundred Gifted Children, Bulletin of University of Kansas, 1930, Vol. 2.

[71] Thora Crowder and J. J. Gallagher, "The Adjustment of Gifted Children in the Regular Classroom Case Studies", Exceptional Children, 1957, No. 23, pp.353-363; 396-398.

2. It is not possible to prove the effectiveness of a program for the gifted by giving achievement tests before the program begins and after it is completed.

Reason: This double administration could show, for example, that the gifted children in the special program have gained two or two-and-a-half years in reading during one school year. However, we know that in the regular program, gifted children often gain in achievement well over the expected rate of growth of the normal child. This merely shows that accelerated educational growth can happen in the special program but still does not answer the question as to whether these youngsters might not have done just as well if not, indeed, even better in the regular program.

3. We cannot demonstrate the effectiveness of a program for gifted children by obtaining the opinions of people connected with the programs, i.e., teachers, parents and children, when these opinions have not been supported by objective measures of some sort.

Reason: Subjective evaluations or opinions have been shown in many experiments in psychology to be subject to conscious or unconscious bias. As a simple example, many of the parents may be happy that the school system is providing a special program for their youngsters and will give a favorable evaluation in order to see the program continue. Teachers not previously aware of the special characteristics or virtues of these youngsters because they had been subdued in a classroom of 35 or 40 children now pay more special attention to them and see those favorable characteristics which might have been present all along. They may misinterpret their own changed perceptions of the children to the advantage of the program.

Finally, there is the phenomenon called the "Hawthorne effect" in which there is the strong suggestion that people will react favorably to any program which evidenced a greater interest in the parents and their children.

One frequently used method of obtaining information about a program that can be called into special question is the questionnaire approach. Questionnaires about programs almost invariably get a positive response partly because people - parents and others - don't wish to respond negatively when people of good faith are trying hard to do something. Secondly, the most disgruntled of the recipients of the questionnaire often do not answer the questionnaire, so the only answers that the researcher gets back are predominantly positive and favorable.

The central question as to what the gifted youngsters would have done if they had not been in a special program is one which points up the necessity of a control group. This is a group of youngsters presumably equal in important respects to the special group. The control group enables the investigator to evaluate what the special group might have done under ordinary circumstances.

4. The benefits of a special program for gifted children will not be demonstrated by comparing these gifted children with the rest of the children at their grade level.

Reason: Obviously, if one takes the brightest children in the group and puts them in one group and keeps all the rest for "controls," then the achievement obtained by the special group may be due, not to the special educational program, but merely to the large difference in intelligence between the two groups to begin with.

5. It is not possible to demonstrate the benefits of a special program for gifted children by showing that children in the special group, even when matched for IQ, are superior if they have not been matched for other important factors also.

Reason: Level of intelligence, obviously, is not the only characteristic closely related to achievement. For example, another important factor is motivation. Most of the programs which are evaluated after the fact, that is after the program is well in progress, will often be comparing gifted children of high motivation (for that is the reason they were placed in the special program in the first place) with gifted children who might be of the same intellectual ability but who have miscellaneous motivational or attitudinal or family problems which kept them from being selected for the special group. Obviously a comparison of the achievement of the two groups does not give us a clear picture upon which to base the evaluation of a special program. The difference between the two groups may be merely reflecting the difference in achievement that is related to good motivation vs. poor motivation.

6. A program for gifted children cannot be adequately evaluated if measuring instruments are not adequate or appropriate to measure the unique nature of the program.

Reason: The use of improper or inadequate measuring instruments could result in not giving full credit to the difference which the special program may have really brought about in the children. Most programs for gifted children put a high premium on the development of such characteristics as creativity, originality, ability to do critical thinking, leadership, etc. Unless the measurements which are to evaluate changes in the children include measures of these characteristics, then the evaluation is inadequate.

Administering a standard achievement test before and after the program, even if the students have been selected with care, will not tell you what you want to know, since there is very little on a standard achievement test that is related to the ability to be creative or to show leadership. Unfortunately, these characteristics are among the most difficult to measure.

An examination of programs for gifted children at the elementary level reveals that they all use the procedure of grouping for at least part of the day.

While there is far from universal agreement on the subject of ability grouping of gifted children in the secondary school, there seems to be a general trend in that direction. The development of the new curriculum offerings which stress conceptual learning has heightened the number of recommendations for some type of grouping, either by intelligence test scores or by aptitude scores in a given subject area.

Gallagher feels that most authorities would probably accept Conant's[72] recommendation concerning ability grouping:

"In the required subjects and those elected by students with a wide range of ability, the students should be grouped according to ability, subject by subject. For example, in English, American History, Algebra, Biology, and Physical Science, there should be at least three types of classes - one for the more able in the subject, another for the large group whose ability is about average and another for the very slow readers who should be handled by special teachers".

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[72] J. B. Conant, The American High School Today, New York: McGraw-Hill, 1959

Special Schools. Though the vast majority of children at the secondary level attend the comprehensive high schools, there are available in larger communities a different kind of high school which has particular importance for the education of gifted children. These are the Special High Schools which have been established for the purpose of training children in certain specific content areas. An outstanding example of this kind of school may be found in New York City, where such specially organized schools as High Schools of Music and Art, the High School of Performing Arts, the High School of Science, and others offer special opportunities and training for able children with specific interests and motivations.

A modification of this special school program may be seen in the "school-within-a-school" program such as found in Forest Hills High School in New York City. There the children are grouped according to curriculum interests within a larger high school unit, but maintain a certain amount of group integrity and purpose. Meister[73] suggests that "If the school population exceeds 1,000 and if 80 per cent or more of the students are college bound, many of the curriculum and organizational devices so advantageous in the special school become feasible." Entrance into the special school is not automatic but depends upon manifestations of high scholastic aptitude and, in some cases, personal interviews.

Some of the advantages of such a school as the High School of Science in New York would be having available a more highly trained and specialized staff, better laboratory facilities, etc. The curriculum offered in the biological sciences at the Bronx High School of Science is a basic course with a year in clinical laboratory techniques. Each science course is liberally provided with laboratory work. The completely equipped laboratories of the school provide every facility for various types of individual and group projects and make possible experiments connected with both class work and hobbies. In mathematics, a four-year sequence is available, including courses in algebra, geometry, intermediate algebra, trigonometry, and solid geometry.

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[73] M. Meister, Education for the Gifted, 57th Yearbook, N.S.S.E., 1958.

In 1952 a questionnaire to graduates of the High School of Science revealed that nearly 80 per cent of them had obtained work in scientific areas, while 20 per cent had become business men, lawyers, writers, etc. In a large community the establishment of specialized schools of this type offers many advantages not contained in the comprehensive high school for intellectually able children.

The following recommendations of the 1959 Conant report concerns ability grouping:

"In the required subjects and those elected by students with a wide range of ability, the student should be grouped according to ability, subject by subject. For example, in English, American History, 9th grade Algebra, Biology, and Physical Science, there should be at least three types of classes - one for the more able in the subject, another for the large group whose ability is about average, and another for the very slow readers who should be handled by special teachers.

For the purpose of developing an understanding between students of different levels of academic ability and vocational goals, home rooms should be organized in such a way as to make them significant social units in the school. To this end students should be kept together in one homeroom for the entire senior high school course and care should be taken to have homeroom a cross section of the school in terms of ability and vocational interest".

Gallagher[74] concludes that ability grouping has become more popular as one means of reducing the tremendous spread of ability and achievement found in the comprehensive high school. This is generally done by subject aptitude rather than IQ scores. A few large communities have established special schools such as the Bronx High School of Science. The special school may represent a partial answer to the question of how to bring gifted students in large cities into contact with well trained faculties and have available adequate laboratory facilities to allow them to take an active, rather than a passive, role in the subjects under consideration. Conant's recommendations are for ability grouping for the academically talented, higher requirements held for the gifted in the academic areas, more effective counselling so that fewer children would slide into occupations below their potential, and acceleration so that students can finish their careers in less time.

The evaluation of programs is sparse at the secondary level. Those few studies that have been done seem to be in favor of special grouping, provided that the grouping is accompanied by some kind of different or special instruction. Attempts to improve the performance of gifted underachievers have not met with notable success, so far, and probably indicate that more intensive work with these difficult students is required in both the academic and counselling areas.

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[74] _Op. cit._, pp. 106-107.

SUMMARY AND CONCLUSIONS

As Franseth and Koury[75] have pointed out, any endeavor to find out the extent to which certain grouping situations contribute to a child's progress poses many questions difficult to answer. "To group or not to group is, of course, not the question, even though we become increasingly aware of possible hazards involved in any effort to organize children for what contributes to improved learning and achievement.

Although still largely limited to study of academic achievement, a century of research has been conducted. Few studies on grouping report any information about the teachers - what they did, how they worked with the children, or what was the interaction of teachers and pupils. Very little is indicated about the teachers as persons. It may well be that pupil gains or losses, sometimes attributed to particular grouping procedures, may be the result of what happens between the teacher and the children after groups are formed. The available research indicates that the kind of interaction experienced between a pupil and his teacher does indeed make a difference in what, how much, and how well he learns."

A survey of the research suggests the following conclusions:

- Learning results from membership in many different kinds of groups - interest, friendship, committee work, panel discussion, instructional groups, and others. Learning gains stem from different purposes and needs.
- A group can be a resource for learning which provides opportunities for its members to learn from one another - new information, new values and new ways of behaving.

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[75] Jane Franseth and Rose Koury, Survey of Research on Grouping as Related to Pupil Learning, U. S. Department of Health, Education, and Welfare, U. S. Government Printing Office, Washington, D. C., 1966, pp. 61-65.

- Human variability and a wide range of individual differences constitute normal phenomena. Differences among children help to enrich resources for learning in the classroom. Consciously or unconsciously, children help to improve each other's opportunities for learning.
- On the average, achievement gains made by pupils in classrooms representing more than a normal spread of differences among children were higher than average gains made by pupils in ability-grouped classrooms.
- Factors other than the particular grouping methods used account for differences that may show up in achievement gains between children grouped according to ability and those grouped heterogeneously.
- Except in a limited sense, and for short periods of time, success in organizing children according to ability is probably an unrealistic expectation especially in the elementary school.
- Findings of studies which have been conducted to determine possible effects of different organizational methods on pupil progress in learning to think, on development of creativity, and development of human values, self-concepts, and attitudes are as yet inconclusive.
- The kinds of pupil-teacher interaction make a difference in what children learn.
- Ample opportunity for flexibility in grouping students seems essential in order to provide opportunities for meeting changing needs of pupils to help every child reach his fullest potential.

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